

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1308. (Vol. XXVI.) 26th Year.
No. 3.

JANUARY 18, 1934

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2

Telephone: (2 lines), Holborn 3211 and 1884.

Telegrams: Truditor Westcent, London

Subscription Rates, Post Free.					
UNITED KINGDOM			OTHER COUNTRIES		
	s.	d.		s.	d.
3 Months ..	8	3	3 Months ..	8	9
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CONTENTS

	PAGE
Editorial Comment	
Higher Cruising Speed	47
Autogiros for Army Use	48
No. 14 (Bomber) Squadron	49
Air Transport: The Avia 51	54
The "Emeraude" Disaster	57
From the Clubs	58
Airisms from the Four Winds	60
Airport News	62
The Bristol Tractor	63
Correspondence	64
Book Reviews	64
Aircraft Furniture	66
Royal Air Force	67
Imports and Exports	68

EDITORIAL COMMENT



COMPETITIONS improve the breed. That is admittedly true of horses, cars, and aeroplanes. The Derby winner may be no use for anything but flat racing, but flat racing has been responsible for the excellence of British horses. Schneider winners are only freak aeroplanes, but the whole business of winning the Schneider Trophy has been of very great use to our designers, so far as producing high-speed aircraft is concerned. Hitherto there has been no special stimulus to British designers to produce machines with a high cruising speed, such as those in which Mr. Frank Hawks, the American pilot, has been astonishing the world. Other countries have not waited for some special event to stir them in this direction, and for this they deserve credit. We British have some leeway to make up.

The world has now begun to call for higher cruising speed. This is a natural development. Speed always begets the desire for more and ever more speed. That is as regards the passenger. In the very early days of air transport it was a mistake to lay too much stress on speed for passengers, for high speed was then a very expensive commodity. It was sufficient for, say, West Australian Airways, to carry their early passengers between Perth and Derby at a slow economical speed, for in any case the aeroplane beat other means of transport by such an enormous margin that there was no need to fly faster than was convenient. In that particular case the same argument could be applied to mails, but, as a general rule, mails ought to be taken at the greatest possible speed, particularly when the airway is in competition with railways. Of course, when there is competition with railways, the question of night flying becomes all-important. Without it, the ordinary aeroplane can beat the train for 12 hours, but may be beaten by it in 24 hours.

We have now got past that initial stage, at least in the more thickly populated parts of the world, when a slow flying speed was sufficient. The air mail system of the United States seems to approach the ideal, for machines with a high cruising speed are used, and night flying is common. Mailplanes and

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

- 1934.
- Jan. 18. "Ethyl," Lecture by F. R. Banks, before R.Ae.S.
- Jan. 19. Newcastle-on-Tyne Ae.C. Annual Ball, Barras Bridge Assembly Rooms.
- Jan. 24. "Development of the Fleet Air Arm." Lecture by Wing Com. W. R. D. Acland, before R.U.S.I.
- Jan. 30. Croydon Airport Annual Dinner and Dance.
- Feb. 1. "Engine Cowlings." Lecture by J. D. North before R.Ae.S.
- Feb. 2. Cinque Ports Flying Club Annual Dinner and Dance, Royal Pavilion Hotel, Folkestone.
- Feb. 10. Services Rugby: R.A.F. v. R.N., at Twickenham.
- Feb. 16. Bristol and Wessex Ae.C. Annual Ball, Grand Spa Hotel, Clifton.
- Feb. 16. De Havilland Technical School Annual Ball, Stag Lane, Edgware.
- Feb. 21. "Development of Aircraft and Its Influence on Air Operations." Lecture by Sq. Ldr. R. V. Goddard before R.U.S.I.
- Feb. 22. Herts and Essex Ae.C. Annual Dinner and Dance, Wharncliffe Rooms, Hotel Gt. Central, London.
- Mar. 15. "Some Developments in Aircraft Construction." Lecture by H. J. Pollard before R.Ae.S.
- Mar. 21. "Some Problems of a Technical Service." Lecture by Wing Com. G. W. Williamson, before R.U.S.I.
- Mar. 24. Services Rugby: R.A.F. v. Army, at Twickenham.
- Mar. 29. "Results from the Compressed-Air Tunnel." Lecture by E. F. Relf, before R.Ae.S.
- Apr. 27-May 6. International Aero Show, Geneva.
- Apr. 5. "Engines." Lecture by Capt. A. G. Forsyth before R.Ae.S.
- May 17-June 2. Royal Tournament, Olympia.
- May 27. Deutsch de la Meurthe Cup.
- June 1. Entries close at 12 noon for London-Melbourne Race.
- June 30. Royal Air Force Display, Hendon.

passenger aeroplanes are separate. Other long airways call for high average speed. The Swissair Company run the fastest air service in Europe. Air-France have also put some very fast machines into service. Imperial Airways argue that for passengers comfort is more important than speed. They also seem to argue that when a journey has exceeded a certain length it is even more important than before to put comfort above speed. The case might be summed up somewhat as follows. On a very short flight, such as between London and Paris, the saving of 10 minutes in the air is not very important, and cannot be compared with the comfort of the passengers. On a longer flight, such as from North to South Europe, speed becomes more important. The traveller will want to arrive as soon as he can, and, as a fast aeroplane is probably not the most comfortable in any case, the passenger will endure a slight increase of discomfort in order to shorten the period of his penance. But when you come to journeys of a week or over, then a prolongation of the journey is preferable to a diminution of comfort.

Well, comfort will always remain a consideration of great importance to most passengers, but as we said above, the time has come when we British must aim at higher cruising speeds in various classes of our aircraft. We must have really very fast mailplanes, for we are convinced that the present policy of Imperial Airways, however it may have been justified by their contract arrangements with the Government, will not endure for ever. In fact, the production of the new D.H. four-engined machine, ordered by Imperial Airways for use on feeder lines and suchlike, seems to indicate a new policy of speed. But we also need the really fast small machine for mail-carrying and special charter work. Fortunately, a stimulus to produce this class has been provided by the MacRobertson race to Australia.

Not long ago we remarked that no aircraft likely to win that race yet existed in this country. We also pointed out that if a British firm or firms designed special aircraft for the race, the winning of the first prize of £10,000 in Australian currency, which equals about £7,500 British at current rates of exchange, would hardly recoup them for their expenses. It is, therefore, very gratifying to learn that at least two, and probably more, designs are being put in hand for special machines to compete on behalf of Great Britain in this great international race. A call for enterprise never remains unanswered by the De Havilland firm. In the days soon after the war, when there seemed little chance of quick returns from civil aircraft and most firms decided to cater only for the Royal Air Force, the De Havilland firm took the long view, and consequently deserve all the success which time has brought them. It is what we should have expected from this firm that they should take the risk of designing a machine for the race to Australia. The Airspeed firm is a comparatively new one, but they, too, are doing notable work in striving to uphold the honour of British design in this very important contest. We hope soon to be able to publish the names of other patriotic firms which are doing likewise and who deserve like honour.

It seems, therefore, that Sir MacPherson Robertson is doing a very useful service to British design in giving prizes for an international race. He is bringing about the production of a new class of British aircraft—one which is certainly needed but

which might not have come into being so soon but for the useful stimulus of a competition in which special efforts were needed to prevent foreign machines having an easy walk-over. Incidentally we hear that the committee in Australia which is conducting the race has made some revision of the conditions, and that these will soon be published in this country. This race may well inaugurate a new era of speed in British aircraft, and whether the race goes to Great Britain or to some country which has more experience in designing types suitable for the conditions of the race, great gratitude is still due to the great-hearted Scottish Australian who has set our designers on this new road.



One of many difficulties in the great war was close communication between Headquarters staffs and the troops under their command. Once battle was joined it often became extremely difficult even for a Brigadier to know exactly where each of his three or four battalions had got to and what it was doing. At the battle of Neuve Chapelle, in March, 1915, the first attempt was made to use aircraft to report the positions of the troops at various stages of the battle. The battalions were ordered to lay out certain distinctive strips of fabric which would indicate to the observers in the air the position of each battalion. In that battle these schemes did not work well. Battle-weary, disorganised by casualties (often the men detailed to lay out the strips had been killed), and harassed by a multitude of duties to be done in a precarious situation, the infantry simply could not give their minds to the matter of laying out the strips, which they probably looked on as the latest useless fad of the "brass hats," and accordingly some of them suffered by lack of the help which the staff might have given them. Later on in the war contact patrols, as they were called, became a regular duty of the Royal Flying Corps, and in time the infantry came to learn and to appreciate the help which could be given to them when they kept the aircraft informed of their needs.

It is obvious that certain forms of contact patrol can be carried out far better if a type of aircraft is used which can virtually hover over one spot at a low height, and which can land in a very small space and take off again from it. The Autogiro seems to meet these requirements. In such a machine a Staff officer can reconnoitre the ground which lies in front of the brigade or division, as the case may be, can see for himself the difficulties in front of each battalion, can notice whether the deployment position has been correctly taken up, and, at least before the battle is joined, can land and have personal consultations with the battalion commanders. Not much less important would be personal visits to other Headquarter staffs. The effect on the *moral* of the troops would be considerable. No longer would the Staff seem to them cold-blooded Valkyries, "choosers of the slain," sitting in comparative safety, "like gods together, careless of mankind." The troops will have seen their Brigadier or their Staff Captain just a few feet over their heads taking a lively personal interest in their doings.

Experiments with Autogiros for Army use are to be undertaken, and the scheme is described on another page. They will be watched with the very greatest interest.



*"There's beauty in the rocky wastes"
(As long as the prop. goes round)
Hilly country east of Akaba*

NO. 14 (BOMBER) SQUADRON

OF the 62 full regular squadrons which comprise the establishment of His Majesty's Royal Air Force, only 39 are stationed within the British Isles; the remaining 23 help to maintain British prestige by preserving peace in various countries for whose welfare Great Britain has made herself responsible. Little is known by the general public at home of the varied nature of work done by these squadrons, and the valuable assistance they render both in checking turbulent waves of unrest which so often threaten the outposts of our Empire, and in pouring the oil of reason upon the troubled waters of fanaticism.

This article deals with the work done by one squadron, which is situated in a country of great interest, of paramount importance to our Empire, but about which little is known on account of its remoteness.

To the east of Palestine beyond Jordan there lies the country of Transjordan, the capital town of which is Amman. Here, among the desolate hills, but surrounded by country of great interest to the biblical scholar, is stationed No. 14 Bomber Squadron. The town of Amman stands on, or very near to, the site of the ancient fortress of Rabbah of the Ammonites. In ancient days Joab, the captain of King David's hosts, besieged the town and fortress, and it was thither that Uriah the Hittite was sent to his death by the good David, who had seen Uriah's wife from the walls of Jerusalem and noted that she was fair to behold. Jeremiah prophesied that an "alarm of war would be heard at Rabbah of the Ammonites," Ezekiel desired to turn the place into a "stable for camels" and the morose old Amos doubted whether it was a fit place in which decent folk should have their habitation. However, in spite of these gentlemen's evil predictions, the

present town of Amman is a very picturesque little place, and as full of life as the presence of an R.A.F. squadron can make it. The actual camp and aerodrome are situated on a little natural plateau set among the hills. On the western edge of the aerodrome is a precipitous drop into a wide wadi which has made Amman aerodrome famous, or infamous, throughout the Service, and woe betide the pilot who does not allow himself sufficient run when taking off over it, or who overshoots when landing towards it, especially in hot weather. There was once a young pilot whose desire to get a heavily laden "Vimy" into the air with all possible speed exceeded his usual exercise of discretion. The "Vimy," probably a machine of mature age, arrived on the edge of the aerodrome with its wheels still clinging to Mother Earth; the young pilot in desperation jerked the machine off at the last moment. The "Vimy" staggered off the ground, but was dragged down into the wadi, compelling the pilot to do a ghastly skid turn to avoid hitting the other side. Twisting and turning, this thoroughly frightened young officer followed the bed of the wadi, and it was not until six or seven miles had passed by that the machine was coaxed from its precarious path and gained a respectable height. Meanwhile, a Crossley tender was delicately picking its way along the wadi in sorrowful search of an expected mangled machine. A few years later another bright young pilot, well known for his somewhat unorthodox clambering swerves, having been ordered to test a D.H. 9A, elected to take off on one switch. The machine, deprived of its full capacity of revs, also sank into the wadi, but this resourceful young pilot, instead of following its course, did a smart left turn into a smaller wadi, and, creeping round the boundaries of the camp, landed across wind

in the aerodrome, and with no damage, though probably more by luck than good judgment. This officer then marched up and reported the machine O.K. to the C.O., who, having but a moment before witnessed, with no little dismay, a perfectly good "Ninak" disappear into the wadi, was so surprised at the unexpected reappearance of the pilot, that he was incapable of administering the deserved ticking-off.

Farther afield the country varies considerably. On the western boundary there stretches, from the little Sea of Galilee in the north, nestling in delicate beauty between the hills, to the more austere heights above the silver water of Akaba, a continuous range of jagged mountains which rise up precipitously from the Jordan Valley, the Dead Sea, and the Wadi Araba to heights varying from 4,000 to 6,000 ft. Eastward these slope away across rolling pasture land to the desert plains of flint and gravel which stretch across to the rivers of Iraq and the mountains of Persia and Anatolia beyond. Very unpleasant to fly over are these mountains, the heat-absorbing rock, the narrow defiles, deep watercourses and towering pinnacles creating vertical currents of such strength as to make it necessary for the occupants of machines to strap their safety belts up tight. Many are the stories told by pilots who have flown over the mountains. One was actually attacked by two eagles while flying a "Ninak" at about 1,000 ft. above the rocks. Frightened lest one of these huge birds should hit his prop, break it, and cause a forced landing in impossible country, probably at the expense of a broken arm, leg or nose, the pilot twisted and turned, and at length, when one of the eagles deliberately dived at his tail and was only washed away by the slip stream, this brave young officer bunged open his throttle, pushed his stick forward and dived away south out of harm's way. Another young officer, over the same country one hot afternoon of a fine summer's day, became so exasperated at the peculiar behaviour of his altimeter, which danced about with delightful inconsistency between 6,000 ft. and 8,000 ft., that he pushed his gloved fist through the glass of the instrument, rendering it incapable of further annoyance. The last story concerns a well-known group captain who was leading a formation of three "Ninaks" from Amman to Akaba. Not wishing to waste time, he flew as low as possible, as was his wont, and, being a bit of a mathematician, he believed that the shortest distance between two points was the straight line joining them, which incidentally led him over the most ghastly country for the majority of the journey. Now the pilot flying on the group captain's



ON THE BORDERS OF ARABIA :
Three perfectly good and respectable officers in costume suitable and comfortable, if not exactly regulation.

left was a young flying officer who was piloting a machine which had just arrived from aircraft dépôt. In the back seat sat a Government official. The latter, when the machine was over the worst part of the country, possessing an inquisitive disposition, handed a chit to the pilot on which was written: "What happens if engine cuts out?"

The pilot, feeling a trifle cynical, and having reached the stage of fatalism, replied: "Wooden boxes for two."

To which the passenger replied entreatingly, "Friend, go up higher."

Farther eastward over the basalt plains, the country is pleasanter for contemplation from the pilot's point of view, as a forced landing here would not result in anything worse than a burst tyre, a splintered prop, or a bent undercarriage. Even over these plains, however, the air is exceedingly bumpy, especially in the middle of a hot day.

The duties of No. 14 Squadron are many and varied. During the hot summer months frequent frontier

reconnaissances are necessary as it is during these months that the tribes, having collected their crops, and with time heavy on their hands, are most ready to disturb the peace by raiding one another. Due to the efficient working of a system of mutual tribal control, backed up in Transjordan by the presence of the Royal Air Force, trans-frontier raiding has ceased to become a regular pastime, and it is many years since a raid on a large scale was carried out against Transjordan. In 1924 a considerable Wahabi force, estimated at between 3,000 and 4,000 camelmen, were engaged by R.A.F. aircraft and armoured cars at Umm el Amad, 12 miles south of Amman. The raiding Arabs soon realised their helplessness from air attack and their total inability to check the armoured cars in the open plain of Ziza, and were completely defeated.

This prompt and energetic action of the R.A.F. averted a serious menace to the peace of Transjordan and the safety of its capital. Not again has a serious raid into Transjordan been attempted, and further trouble is unlikely so long as the R.A.F. keep a watchful eye over the frontiers.

No pilot who has been stationed at Amman will ever forget the tediousness of the south-eastern "recco's." Leaving Amman at crack of dawn, when the air is cool and calm, the machines fly over a little line of hills and across the plain to Kasr Tuba, an ancient castle outpost beside a wide wadi, and it is not every pilot who finds it. From here can be seen, away to the south, Thlaithukwat, the Three Sisters, whose clean white peaks on their lofty watershed are a wonderful landmark to pilots whose navigation is not all that it should be, or who are hampered by bad visibility.

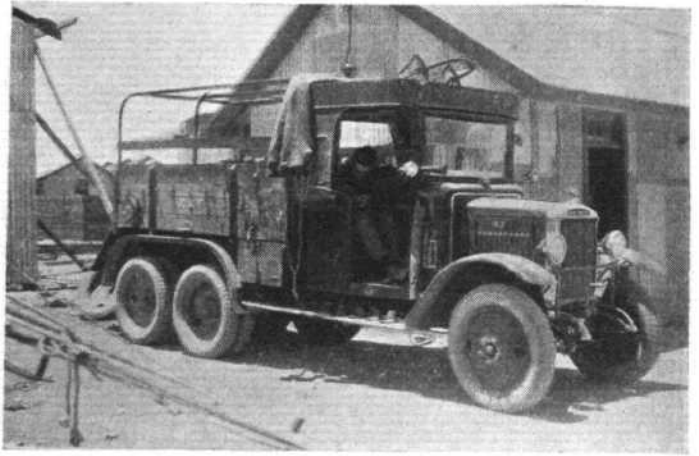
In fact, so great a value do No. 14 Squadron attach to these peaks that after the great earthquake of 1928 a special "recco" was sent out to ascertain whether they were still intact and in the same place. A few miles south of these peaks the machines reach the broad Wadi Bair with its wells, castle and landing ground, a favourite camping ground, amid the stumpy tamarisk shrubs, of the famous Howeitat tribe. The "recco" then turns eastward



A DESERT PATROL : Three armoured cars of No. 2 A.C.C. which works in co-operation with the Squadron.

across the plains of flinty gravel and sandy wadis until Bair Naam or Imshash is reached. Here, on a large natural landing ground beside the wells, nigh 200 miles from civilisation, and only just within the borders of Trans-jordan, the machines frequently land, or used to, for a cooling drink of water(?) and a welcome snack of bully beef(?) and ration biscuits(?). (What about the empty Amstel bottles and opened tins of Palethorpe's sausages, and Mr. Heintz's beans, which have been seen near the wells?)

On once more climbing into the air, the machines fly south for a few miles until the white-chalked hills of Hausa are in sight; they then turn west and make for Ma'an, flying over the vast sandy area of the Jeefer depression. An interesting little town is Ma'an, and one well acquainted with aircraft, for the Turks had a flying school there during the war. The circle of their aerodrome is still visible. The town stands on a plateau 4,000 ft. above sea level, open to all the winds from north and east which blow from Central Asia or from the Caucasus mountains, cold and terrible over the desert to the mountains of Edom above Ma'an, against which their first fury is broken. In the heat of the summer the air at Ma'an is so thin that it is often unwise to attempt a take off in the middle of the day. After a welcome siesta during the afternoon, the pilots return to Amman in the cool of the



A MORRIS SIX-WHEELER : A Morris commercial vehicle (six-gear) adopted for punitive work ; note the gun ring.



A six-wheeler armoured car, the first of this type to be seen in Transjordan.

evening, generally leaving Ma'an at the last possible moment, and a very pleasant flight that return trip can be, the air cool and calm, the country beneath good, and a pleasant feeling of a tedious job successfully accomplished.

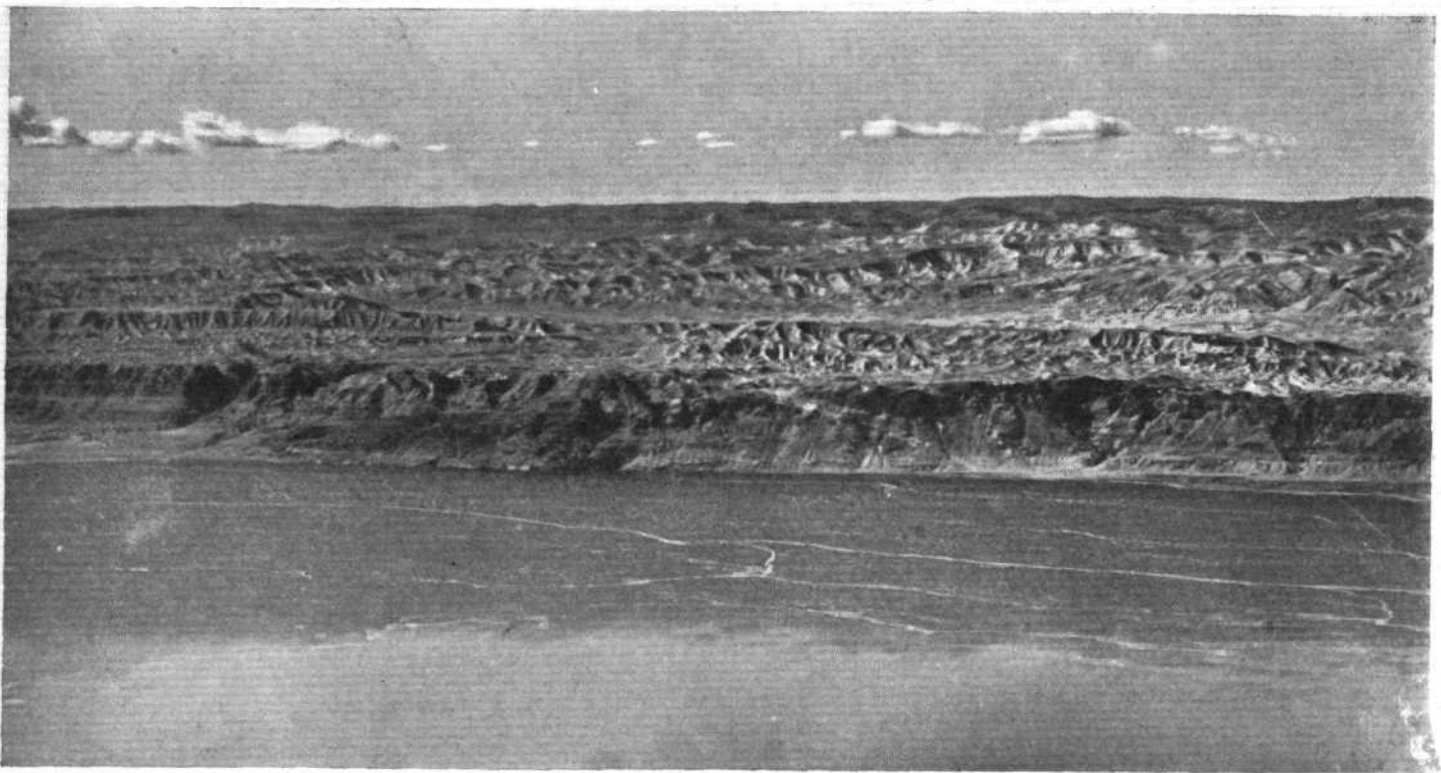
A shorter "recco" is also done to the north, if trouble is brewing, once a day. The route of this "recco" follows the railway to Zerka, where repose in the quiet fastness of their camp the Transjordan Frontier Force, who occasionally conduct highly organised expeditions into the surrounding desert in the name of peace and good will. North of Zerka is the large Plain of Mafrak, on which many squadrons could land in formation, and on its northern border, where it slopes up to the mountains above Galilee, is the village of Remte, the ancient Ramoth Gilead, where Jehoram, son of Ahab, was wounded, and from where Jehu, the son of Nimshi, exceeded the chariotorial speed limit in a successful endeavour to reach Samaria in time to catch and slay Jehoram and Queen Jezebel. Here the machines turn east along the southern borders of Syria, crossing the Roman road whose stone causeway stretches

across the plain straight and narrow. Um-el-Jemal is passed, once a fair city and home of a romantic princess, now a mass of blackened ruins. It was near here that Maj. Ross Smith, at the request of Col. Lawrence, landed a giant Handley Page Bomber on November 22, 1918, which brought from the Arabs the exclamation: "Indeed, they have sent us 'the' aeroplane of which these others are but foals." East of Um-el-Jemal the brown plain of Mafrak merges into the desert, to the north of which lies basalt country. The machines follow the clear-cut line which divides the two, passing over a succession of long sandy depressions, until the desert oasis of Azrak is reached—Azrak the beautiful, with its blue fort set on its rock amid the rustling palms beside fresh meadows and shining pools of water—Azrak with its unfathomable silence, steeped in the ancient lore of wandering poets, champions and lost kingdoms, hushed into silent mourning for the crimes, chivalry and dead magnificence of Hir and Ghassan. The "recco" machines then proceed home to Amman. These northern "reccos" serve a dual purpose. They prevent the Transjordan tribes massing on the borders to carry out raids into Syria, and they can keep a lookout for Central Arabian tribes who may creep up the Wadi Sirhan, also with Syria as their objective, by way of the Azrak corridor.

This policing work is the chief duty of No. 14 Squadron, but there are other duties to be done. Officials require ferrying about, patients are flown to hospital, important dispatches and mails have to be carried across the hills to Ramleh or down to the pleasant land of Egypt. The



NATIVES OF TRANSJORDAN : Members of the Beni Sakhar tribe which fought on both sides during the Great War.



"DESOLATION OF DESOLATION": The Dead Sea, with the mountains of Moab in the background. The white streaks are signs of salt deposits.

fleishpots of Cairo are a great attraction after months of Amman's austerity, and keen is the competition to carry mail thither, the lucky pilot's brain being filled with messages, commissions, warnings and advice. Occasionally, very occasionally, Imperial Airways desire assistance for forced-landed machines; more frequently cars coming across the desert track get lost or run out of petrol, and No. 14 Squadron proceed to the rescue. More work of a humanitarian nature is done by the Royal Air Force abroad than by either of the other two Services. One does hear occasionally of a warship chasing a minute Chinese pirate vessel, but not often. The Royal Air Force may be the junior Service in age, but it is certainly senior in utility. It is doubtful whether there exists another squadron which does more of this work than No. 14. In addition to all these varied duties mentioned above, the Squadron also has to go through the normal training routine, which includes such subjects as bombing, front and rear gun, photography, etc. So the pilots are not often idle, and No. 14 has earned for itself the reputation of being one of the hardest flying squadrons in the Service.

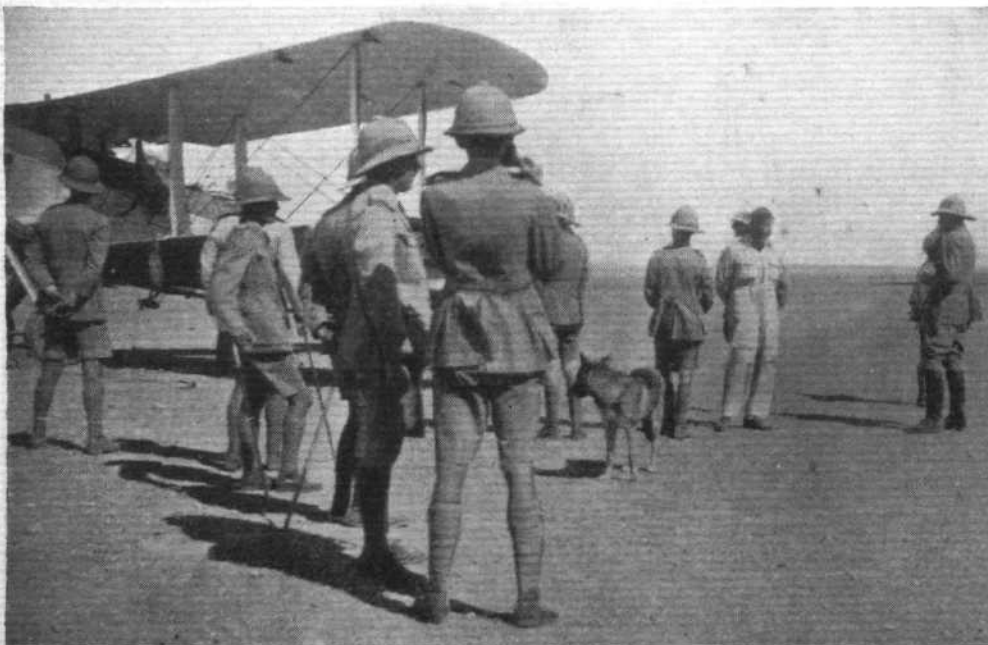
Apart from aerial transport, the only other modern methods of communication in Transjordan are cars, for the most part old and of American construction, which

run about the desert with delightful disregard for springs and a cheerful belief in the infallible reliability of modern mechanism, and a railway line which runs from Damascus in Syria through Transjordan to Ma'an. In the days of Turkish domination it proceeded farther south even to the holy city of Medina. During the war Col. Lawrence amused himself and annoyed the Turks by blowing it up at odd times and in various places, since when it has not been repaired south of Ma'an, though most of the track still remains.

The Squadron is ably assisted in its work by No. 2 Armoured Car Company, stationed at Ramleh, with detachments at Ma'an and Azrak. Both the Squadron and the armoured cars are jealously proud of their different spheres of duty, yet they work together with loyal co-operation. If armoured cars in the desert are ever unable to locate their vicinity, out go the machines, and seldom return without accomplishing their aim, and if machines forced-land, out go the cars at a moment's notice, and in any weather, to render assistance. On one occasion when the Wahabis were known to be on the border, intent on raiding, a machine went down not 20 miles from the border and needed a new engine. Within one hour of the news reaching Amman—yes, one hour—a Leyland lorry, with a spare engine on

board, escorted by an armoured car, had left, and, journeying through the night, accomplished the odd 200 miles in under 12 hours, which, considering the nature of the country and the fact that most of the trip was done during the hours of darkness, was a truly marvellous performance.

The country of Transjordan is a Mandate of Great Britain, ruled over by the Emir Abdullah, son of King Hussein, and brother of the late King Feisal of Iraq. An astute man with a confirmed twinkle in his eyes, a charming manner, and a quiet air of dignity which is a legacy from his great ancestors, he takes great interest in the Squadron, realising, probably better than others, the value



Visit of the Under-Secretary of State, Sir Philip Sassoon (in white overalls), at Amman. On his left (in field boots) is Group Capt. Rees, V.C.

A TEMPORARY CRIPPLE: A forced landing at Bair. Waiting for a new engine to be brought by lorry from Amman, 150 miles away.



of the Air Force as a source of protection for his country.

No. 14 Squadron have lately been re-equipped with Fairey "Gordon" general purpose machines, fitted with "Panther 11A" engines in place of the Fairey III.F's which succeeded the D.H. 9.A's. Many years must pass, however, before the old "Ninak" is forgotten in connection with No. 14 Squadron. This machine did sterling work in the early post-war years when it was first decided to station aircraft at Amman. Heavily overladen with wireless and desert equipment, this relic of the war staggered off small aerodromes and lumbered through thin, hot air, bumped and buffeted about by local climatic conditions. Considering the number of hours flown, the old "Liberty" engine seldom let the pilot down, and the scarcity of accidents proves the high standard of efficiency and skill maintained by the pilots under very trying conditions.

No squadron in the Service can boast such an interesting history, in so much that it is almost sacrilege to condense it into so few words. Formed at Shoreham on February 3, 1915, from the 5th Wing, R.F.C., the squadron were equipped with Maurice Farman biplanes and a few Martinsydes. On November 7, 1915, they embarked for Alexandria and, equipped with B.E.2C's, were stationed at Ismailia to operate between Egypt and Palestine. Thereafter, like the Children of Israel, they wandered over Palestine, Transjordan, Egypt and the Hedjaz from Alexandria to Ismailia and Suez, from Kantara to Ramleh and Jerusalem and from El Wejh in the Hedjaz to Damascus in Syria. They assisted in the push across the Sinai Desert, sent a flight to join Lawrence's campaign in Arabia and Transjordan, and finally took very active participation in Allenby's magnificent drive up to Damascus, bombing Amman, their present home, on the way. In May, 1916, machines from No. 14 rescued Lt. (now Sir Pierre) Van Ryneveld, who had forced-landed in the Sinai Desert. About the same time, Lt. Kingsley forced-landed on a flat mountain top in South Sinai. The pilot repaired the engine while his observer kept the Turks at bay with a rear gun. Eventually the pilot took off, diving over the mountain side after a too short run and flew back home. In the

beginning of 1917, after the evacuation of El Arish, and when the pipe line was being laid across the desert, Lt. Seward was hit by "Archies" near Gaza. He descended in the sea to prevent his machine being captured. On being fired at by the Turks, he swam farther out to sea, then for four hours followed the coast, and eventually landed exhausted, being picked up by one of our own cavalry patrols. The Squadron returned home in January, 1919, and were disbanded at Tangmere in the following month. In February, 1920, No. 111 Squadron, stationed at Ramleh, Palestine, were redesignated No. 14 Squadron, and a few years later moved eastward across Jordan to Amman.

From the wide bay of Alexandria, and from under the shadows of the great Pyramids at Giza in Egypt's fair, sunny land, to the desert fastness of El Wejh in Arabia, to Jerusalem upon its seven hills, to the desert solitude of Azrak's beautiful pools, and to the magnificent ruins of Jupiter's temple at Baalbec, No. 14 Squadron have crusaded through the pilgrim lands of history, traversing on their way the ruins of Rome's civilisation, the devastated splendours of Asiatic Greece, and the wonderful land of Palestine, wherein is enshrined for ever the glorious memory of the triumphs of early Christendom.

(The writer of this article had the privilege of being a member of No. 14 Bomber Squadron during the years 1927 and 1928. This article in detail refers to that period, and the accompanying photographs were taken then. The general work of the Squadron, however, has not changed much, and the country is still the same, so this article should enable readers of FLIGHT to get some idea of the very valuable work done by No. 14 Bomber Squadron in the country of Transjordan.)

W. A. C.

For a list of other descriptive articles on the work of R.A.F. Squadrons, etc., see page 67.



POLICING THE DESERT FRONTIER: Taken at a landing ground on the edge of the Wadi Sirhan. These six machines were doing a long reconnaissance, during a Wahabi revolt. A large party of Wahabis were sitting on their frontier, but a few miles away, when this photo was taken.



Air aides-de-camp to the King

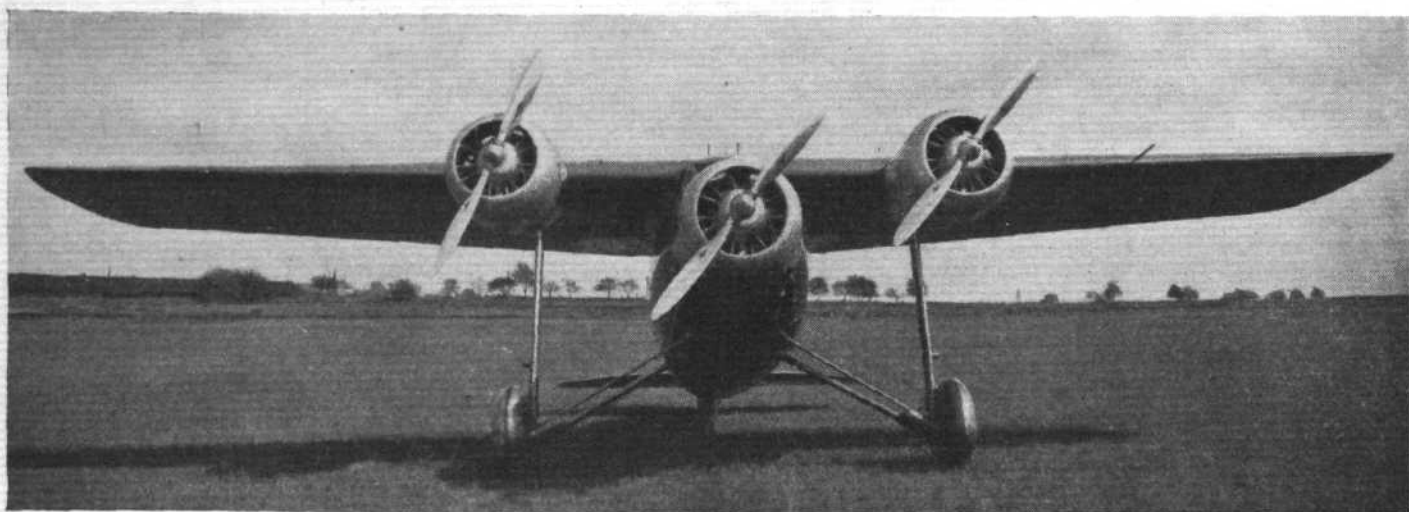
THE Air Ministry announces the appointment of Group Capt. Roderic Maxwell Hill, M.C., A.F.C., and Group Capt. Thomas Edward Barham Howe, A.F.C., as Air Aides-de-Camp to the King. Group Capt. Hill succeeds Air Commodore Lawrence Arthur Pattinson, D.S.O., M.C., D.F.C., who relinquished the post on promotion to his

present rank on January 1, 1934. Group Capt. Howe's appointment is an additional one.

Honorary chaplain to the King

THE Air Ministry announces the appointment of the Rev. James Rowland Walkey, M.A., Chaplain-in-Chief, Royal Air Force, as an Honorary Chaplain to the King, in succession to the Rev. S. L. Clarke, M.A., B.Sc.

Air Transport & Commerce.



WELL FAIRED: The front view of the Avia 51 shows that there are no unnecessary excrescences.

THE AVIA 51

A Czech High-performance Passenger Plane

MR. ROBERT J. NEBESAR will be remembered by readers of FLIGHT as the author of an article entitled "Supercharging the Aeroplane Engine and increasing Speed with Altitude," published

in THE AIRCRAFT ENGINEER (Monthly Technical Supplement to FLIGHT) on December 25, 1931. At that time Mr. Nebesar was Project Engineer to the Detroit Aircraft Corporation. He has since returned to his native Czechoslovakia, and during last year has been engaged on the design of a small three-engined commercial monoplane for the Avia Company of Prague. This machine, the Avia 51, is shown in the accompanying illustrations. It made its test flights some time ago, and came up to its designer's estimates in every respect. Mr. Nebesar carried out extensive model tests both at Prague and at the French laboratory at Saint Cyr. It is, Mr. Nebesar informs us, largely a result of these careful model tests that he has been able to obtain such high aerodynamic efficiency. The value of the Everling "High-Speed Figure" is 20.9, which must be regarded as extremely good for a three-engined machine, and shows that the minimum drag coefficient is low. Another very important factor in a commercial machine is the maximum ratio of lift to drag. The maximum L/D of the Avia 51 is 10.2 or, expressed otherwise, the best gliding angle is 5 degrees 35 minutes. The wing loading is high (19.3 lb./sq. ft.), and as the maximum lift coefficient is about normal (0.75 in British "absolute" units), the landing speed is also high. The figure 62 m.p.h. is quoted by the firm, but for the wing loading and k_L max. men-

tioned above one would expect the minimum speed to be about 70-71 m.p.h. As no air brakes are fitted, and the gliding angle is very flat, this landing speed appears rather high in comparison with current British practice. Since,

however, the Avia 51 is capable of maintaining flight with one engine stopped, forced landings should rarely occur, and the high landing speed may be tolerated.

In external appearance the Avia 51 is of fairly orthodox design, with the wing engines faired into the leading edge and the central engine mounted in the nose of a streamline fuselage. The somewhat "stilty" appearance caused by the long undercarriage legs is doubtless a result of the designer's desire to provide a good ground angle coupled with a long travel of the wheels.

In the construction of the Avia 51 nothing but metal and fabric has been used (with the exception of certain cabin decorations). Duralumin and high tensile steel are the materials employed. Painting, lacquering and cadmium plating are the precautions taken against corrosion.

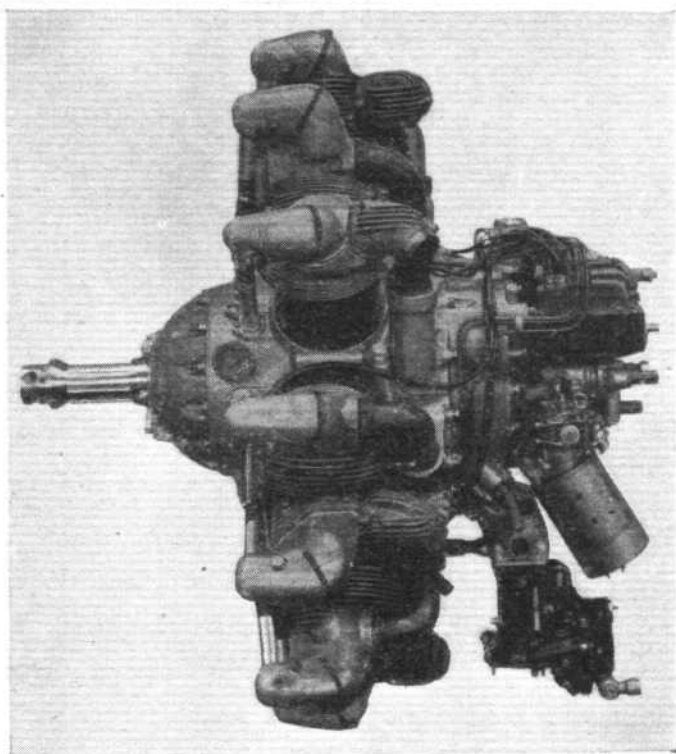
The cantilever monoplane wing is of orthodox two-spar construction. The spars are built up of duralumin, with booms of "D" section and ties of channel section, forming an N-girder. The "D" section spar booms are, of course, built up of a "U" section strip with a corrugated covering strip closing the open side of the U section. It is noted that the rounded side of the "D" is facing inwards. One would have thought that the more logical way was to turn the rounded side outwards so as to get the riveting a little away from the area of maximum stress. The reverse arrangement possibly makes the

THE AVIA 51 3 Avia R.12 Engines

Dimensions		
Length o.a.	.. ..	35 ft. 6 in.
Height ..	.. ..	11 ft. 6 in.
Maximum width of fuselage	.. ..	5 ft. 6 in.
Wing span ..	.. ..	50 ft. 0 in.
Wing area ..	.. ..	410 sq. ft.

Weights		
		lb.
Tare weight, equipped	.. ..	5,200
Disposable load	.. ..	2,720
Crew ..	.. ..	350
5 passengers ..	.. ..	880
Luggage ..	.. ..	165
Mails ..	.. ..	275
Total payload	.. ..	1,670
Petrol ..	.. ..	820
Oil ..	.. ..	110
Special equipment	.. ..	120
Total loaded weight	.. ..	7,920
Ratio gross wt./tare wt.	.. ..	1.523
Power loading	.. ..	13.2 lb./h.p.
Wing loading	.. ..	19.3 lb./sq. ft.

Performance		
Maximum speed	.. ..	165 m.p.h.
Cruising speed ..	.. ..	142 m.p.h.
Landing speed ..	.. ..	62 m.p.h.
Initial climb ..	.. ..	820 ft./min.
Service ceiling ..	.. ..	14,000 ft.
Service ceiling with 2 engines ..	.. ..	3,600 ft.
Take-off ..	.. ..	780 ft.
Landing run (with brakes) ..	.. ..	650 ft.
Range at cruising speed	.. ..	500 miles



ONE OF THE ENGINES: The Avia R-12 engine is a 7-cyl. radial air-cooled, rated at 200 b.h.p. at 2,000 r.p.m. normal. It has a capacity of 735 cu. in. and weighs 466 lb. without propeller hub.

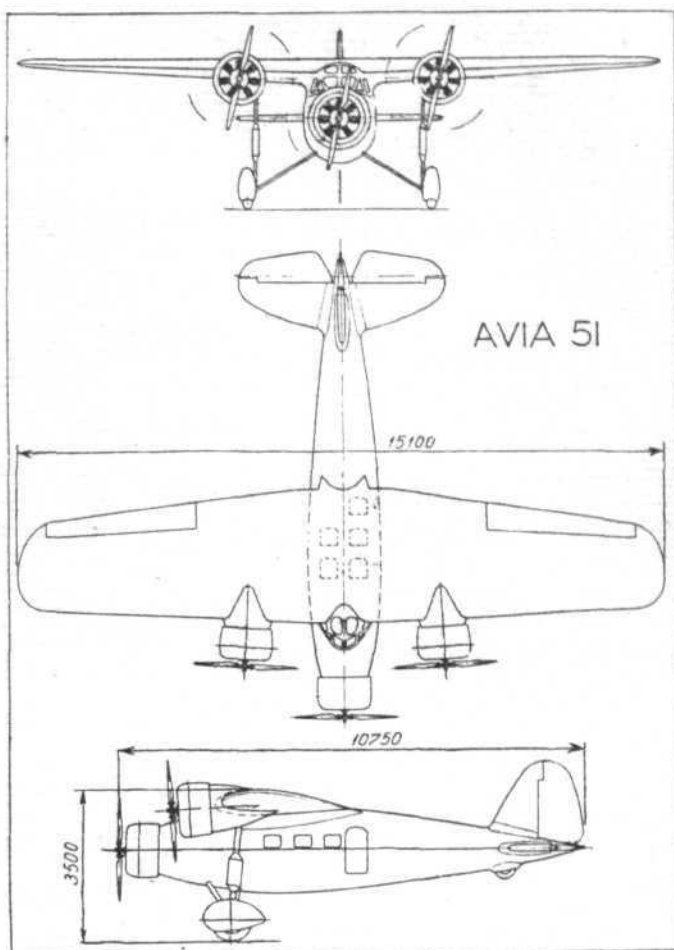
attachment of the channel section ties easier, and Mr. Nebesar informs us that he has been able to get 45,000 lb./sq. in. column stress out of his spar booms. The wing ribs, also of duralumin, are built up of "bulb" sections.

Ailerons of Frise type are used, the aileron spars being duralumin tubes. Fin, rudder, tailplane and elevator are of duralumin construction, and the hinges of rudder and elevator are of the set-back Handley Page type.

In the construction of the fuselage the so-called "mixed monocoque" system is used. The unsupported panel areas are very small, as there are six main longerons with intermediate stringers, while double-walled bulkheads are spaced fairly closely, and lighter formers are placed between them. The fuselage cross-section is of oval shape, and the covering is duralumin sheet, riveted to longerons, stringers and double-walled bulkheads, but not to the intermediate formers.

A divided type of undercarriage is used, with long telescopic legs running to the front wing spar. These telescopic legs are of the oleo-pneumatic type, and have a long stroke. The wheel track is wide, and wheel brakes are fitted. If desired, the Avia 51 can be fitted with floats.

The three Avia R-12 engines which form the power plant of the Avia 51 are seven-cylinder radial air-cooled, of a rated power of 200 b.h.p. each. They are mounted on welded steel tube structures, easily detachable as complete units, and rubber bushes are interposed to absorb

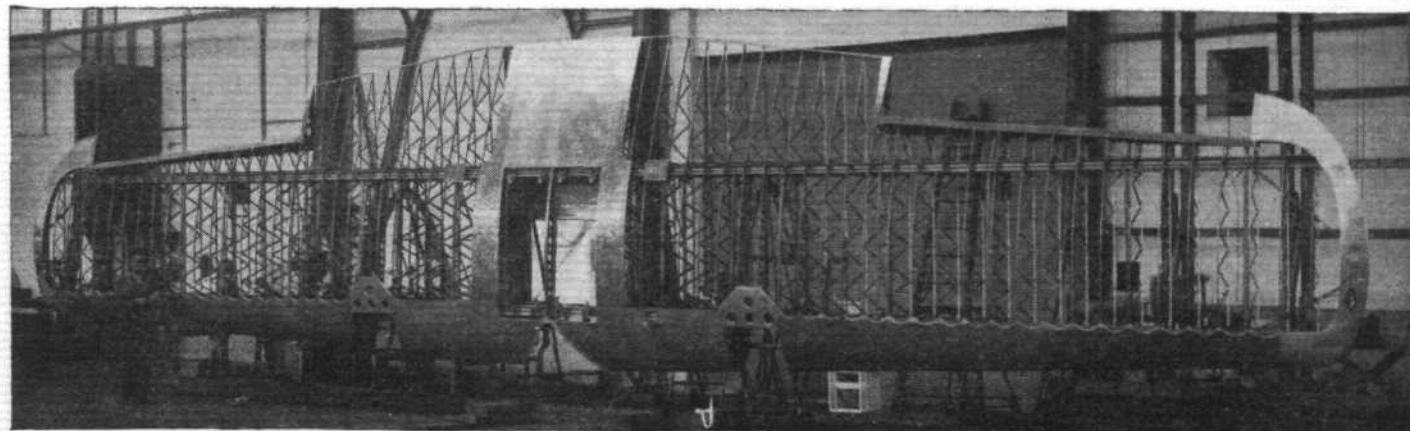


THE AVIA 51: Three-view general arrangement drawings.

vibration. Engine starting is by compressed air, the central engine driving the compressor. Two-bladed adjustable pitch metal propellers are fitted. All three engines are enclosed in complete N.A.C.A. cowlings.

Petrol is carried in two soldered brass tanks, each of 16½ gallons capacity. The tanks are mounted in the wing, between the wing spars. Fuel is supplied to the engines by engine-driven pumps. The oil tanks have a capacity of 5 gallons each, and adjustable oil coolers are combined with the tanks.

Seating accommodation is provided in the cabin for five passengers, the seats having deep cushions and head rests. Ventilation is by ducts from cowls in the wing roots, and adjustable ventilators are placed at each seat. Heating is by hot air from a muff around the exhaust pipe of the central engine. The cabin has a length of 10 ft., a height of 5 ft. 1 in. and a width of 4 ft. 11 in. The height is not sufficient to give room to stand upright, but in any case it is doubtful if there is room to walk about in such a small cabin. Behind the cabin is a lavatory, and there are three luggage and mail compartments, one forward, one in the cabin, and one behind the cabin.



THE ALL-METAL WING STRUCTURE: A sheet Duralumin covering extends over the leading edge and back behind the front spar.



THE AVIA 51 : Careful streamlining has resulted in a cruising speed of 142 m.p.h.

A door in the front wall of the cabin communicates with the pilots' cockpit, which has two seats side by side. The chief pilot occupies the left seat, while the second pilot, who is also the radio operator, occupies the right seat. The windscreen is of non-splintering glass, and the side windows can be opened. View upward is afforded by the cockpit skylight, but to the back the view is cut

off, and a mirror is so fitted that the pilot can see in it what is behind the machine.

The usual instrument equipment is supplied with the standard machine, but if night-flying or blind flying is contemplated, special equipment can be supplied at extra cost. The usual navigation lighting equipment is always provided.

THE EMERAUDE DISASTER

ANOTHER terrible air disaster has occurred through an aeroplane hitting an electric cable, this time with the loss of 10 lives, including the Governor General of French Indo-China and the Director General of French Civil Flying. The machine was the *Emeraude*, the new type of metal low-wing Dewoitine monoplane, driven by three 575-h.p. Hispano-Suiza engines. It was homeward bound from Saigon for Paris, flown by an experienced pilot, M. Launay, with a wireless operator named Queyrel and a mechanic whose name is variously given as Crampell, Cranweil, and Campbell. The passengers were M. Pasquier, Governor General of Indo-China; his A.D.C., Capt. Boussault; M. Emmanuel Chamie, Director of Civil Flying, and Madame Chamie; M. Noguès, General Manager of Air-France; M. Larrieux, representative of Air-France at Damascus; and M. Balazucé, of the French Air Ministry.

On Monday, January 15, the machine left Athens and reached Lyons in the evening, starting again for Paris at

6.15. At 8.10 p.m. it sent a wireless message to Lyons saying that it was flying at a height of 4,800 ft. in a heavy snowstorm. According to early reports received in Paris, the pilot was trying to make a landing near the village of Corbigny (Nièvre), about 150 miles south of Paris, when it struck an electric cable, crashed, and caught fire. All on board were killed. The electric light of the whole district was immediately cut off. Attempts were made to drag the bodies from the wreckage, but they were prevented by the fire. It is stated that the Mayor of Corbigny was severely burned in the attempt. A suggestion has been made that ice had formed on the wings of the machine, and so caused the pilot to attempt a landing.

M. Pasquier was 57 years of age, and had been Governor General of Indo-China since 1928. Previously he had been Governor of Annam. He had done a lot of flying, and had once made a very fast journey back from Indo-China to France in a small Farman machine.

BRISTOL-CARDIFF RUGBY SERVICE

For the English-Welsh International Rugby Match at Cardiff on January 20, Western Airways, Ltd., are operating an hourly service between Bristol and Cardiff. Advance bookings already show that there will be a heavy demand for seats on this service. Western Airways are also supplying a "Dragon Moth" to carry a party of South Wales miners from Tylerstown to Edinburgh on Saturday, February 3, for the International Rugby Match between Wales and Scotland.

CHANGES IN ITALIAN SERVICES

THE Società Anonima di Navigazione Aerea made several important changes in its air services on January 15. At present the company operates two four-engined Dornier "Super-Wals" and some new "Marina I's." To these will be added some Savoia-Marchetti S.66's with a cruising speed of about 125 m.p.h. The following services will be operated: (1) Rome-Syracuse-Tripoli, thrice weekly (five hours); (2) Rome-Naples-Syracuse-Malta-Tripoli, thrice weekly (which will ensure the Rome-Tripoli connection throughout the year); (3) Rome-Marseilles, thrice weekly (three hours); Rome-Genoa-Marseilles-Barcelona, thrice weekly; (4) Rome-Naples-Palermo, with connection at Palermo for Tunis (S.A.M.).

We regret that owing to a slip the name of this company (S.A.N.A.) was given incorrectly in last week's issue.

SABENA FIGURES

THE following are the figures for the fleet of Sabena for November, 1933:—28,425 miles, 2,677 passenger-miles, 404 ton-miles of freight and 402 ton-miles of mail. The following are the figures for 1932 given in the same order:—28,200, 63,200, 5,000 and 775.

PROVINCIAL AIRWAYS

SINCE the first experimental service between London and Plymouth inaugurated last November by Provincial Airways, Ltd., the company had to postpone the regular operation of the service, owing to the sudden illness of the managing director, Maj. H. Kent. We understand that Maj. Kent is now on the road to recovery, and that it is hoped to get the service started shortly. Meanwhile, every effort is being made to complete the many details necessary in the organisation of an air service, etc., such as this. Incidentally, will collectors of air mail covers who are wishing to add letters carried on this service, please note that except for the first experimental flight covers, other "West Country" covers are temporarily held up.



SPEEDING-UP BRITISH AIR TRANSPORT : The de Havilland D.H.86 can be regarded as a high-speed development of the "Dragon," from which it differs in having four engines and very tapered wings. The machine has not been through the Martlesham tests yet, and no official performance figures are, therefore, available, but one only has to see it fly to realise that it is very fast indeed. (FLIGHT Photo.)

AN AIR LINER IN MINIATURE

SUITABLE for feeder and auxiliary services, the smallest four-engined airliner yet constructed, built to the order of Imperial Airways by the de Havilland Aircraft Company, made its first test flight at Stag Lane Aerodrome, Edgware, on January 15. The machine, shown in the above illustration, is a biplane and has four "Gipsy" engines mounted on the lower wing. In addition to a crew of one, the machine will carry up to ten passengers at a speed of more than 120 m.p.h. This aircraft is intended to provide a replica in miniature of the big four-engined airliner, and has the same reliability, comfort and absence of noise. Its size will render it less costly to operate and it will, therefore, be particularly suitable for auxiliary and feeder services, connecting with main Empire air routes and providing quick and luxurious air travel in all cases where only moderate loads have to be carried.

THE PANDER "POSTJAGER"

THE Pander *Postjager* which, as was reported in FLIGHT last week, reached Batavia on December 31 and left on a return flight on Friday, January 5, in an attempt to set up a record for a flight from the Dutch East Indies to Holland, was held up at Calcutta by the breaking of an engine starter. The flight from Batavia to Calcutta, a distance of 2,500 miles, was made in just over 15 hours' flying time. After the necessary repairs had been done, the machine left for Karachi and was reported missing between there and Allahabad. Not long after it turned up at its destination, and on the morning of January 9 left for Amsterdam. The *Postjager* is a low-wing monoplane fitted with three Wright "Whirlwind" engines and has a cruising speed of over 200 m.p.h. It does not belong to the Royal Dutch Air Lines, but to a committee which has been examining the possibilities of quicker air mail transport between Holland and the East.

COMING EVENTS

It is reported that Pan American Airways is negotiating with the Portuguese Government for permission to use the Azores islands and Portuguese territory on regular transatlantic air connections. Meanwhile—

FRENCH TRANSATLANTIC FLYING-BOATS

THE Latécoère 300 flying-boat (four 650-h.p. Hispano engines), *Croix du Sud*, which recently flew non-stop between Marseilles and Saint Louis du Sénégal, a distance of 2,675

miles, flew across the Southern Atlantic to Natal on January 3-4. It later flew on to Buenos Aires. The big Blériot 5190 flying-boat, which was designed by the Italian engineer, Zappata, who formerly worked with the Blériot firm, and which is fitted with engines of the same type as those used in the Latécoère boat, is now in flying order after being repaired since it caught on fire some time back. This aircraft is to be flown to Berre, near Marseilles, by Bossoutrot, and will eventually make a trip to South America. We understand that the Lioré et Olivier 27 flying-boat (four 650-h.p. Hispanos) will also make a transatlantic flight, piloted by M. Bourdin.

INTERNATIONAL RIVALRY FOR FIRST TRANS-ATLANTIC SERVICE

WE mentioned above that France is busy experimenting with various large flying-boats for the Transatlantic service. The *Daily Telegraph* states that Luft Hansa is to start a fortnightly service between Stuttgart and Port Natal (Brazil) on February 3. According to *The Times* the first fast air mail service between Rome and Buenos Aires will be inaugurated on January 27, when Lombardi and Mazotti, accompanied by two assistants, will fly a triple-engined Savoia-Marchetti 71 to Buenos Aires via Casablanca, Dakar, Natal (Brazil) and Rio de Janeiro.

GOOD BASIC DESIGN

It appears that the Bernard type "81 G.R." machine is to be the parent of quite a family of new aircraft. We announced last week that from that design a long-range bomber has been developed, and now we understand that a three-engined machine, also developed from the "81," is being built for the Africa-South America connection. It will probably be fitted with three 575-h.p. Hispano-Suiza engines or three 600-h.p. Gnome-Rhones. The top speed should be about 186 m.p.h., and the range should exceed 2,500 miles.

AMERICAN NIGHT-FLYING INSTRUCTION FOR K.L.M.

A SIX-MONTHS' contract has been made between K.L.M. and Mr. Stark, an American authority on night flying. The contract calls for the instruction of K.L.M. personnel in this work. This instruction will shortly be commenced. It should be borne in mind that K.L.M. intends to operate the Holland-India service without halts at night, and the big new Fokker F.36, which will be completed in a few months, may be used for this work.

From the Clubs.

HATFIELD

Flying times for the London Aeroplane Club for the week totalled 18 hr. 5 min. Among new members, the Club have pleasure in welcoming Sabah El Said and Tareq el Askeri from Iraq. Mr. C. B. Mills has completed his tests for an "A" licence. The flying times for the R.A.F. Reserve Flying Club totalled 36 hr., there being nine new members. The Stage and Screen Aero Club recorded 25 min. flying time, a visitor being Miss Kathleen Stammers, the tennis player, who took a first flight with Mr. Fulford. Among other visitors to the aerodrome were Mr. Diamant, of the Dominion Motor Spirit Co., in a "Puss Moth," Mr. Upton, also in a "Puss Moth," and Mr. Harris, from Broxbourne, in a "Moth." A very successful children's party was held on Monday, January 8, at which about a hundred were present. The usual Saturday night dinner dances will be held during the month.

HANWORTH (N.F.S.)

Owing to the bad weather only 19 hr. flying was carried out during last week. Mr. Revell successfully carried out his first solo flight and Mr. Ian Ramsay, who is training for a "B" licence, left on Friday, January 12, for a cross-country flight to Middlesbrough. Two new pupils, Mr. A. M. Broad and Lt. Dupree, have joined the Club and have started flying instruction.

CINQUE PORTS FLYING CLUB

The Club reopened on Friday, January 12, and flying started with a swing, some 10 hr. being flown in the first two days. Mr. Topham completed his "A" licence tests which he had been unable to do before the holidays. All the Club machines have been painted silver and blue, with maroon trimmings to come in line with the Club colours. The sixth annual dinner and dance will be held at the Royal Pavilion Hotel, Folkestone, on Friday, February 2. A London dance band has been engaged, and during the evening there will be an opportunity of hearing two Russian singers, Georges Seversky and Zandra Swenska, who are flying over from Paris to attend the party. Lt. Col. and Mrs. Shelmerdine will be the guests of the evening. Tickets for the dinner and dance, 10s. 6d. single and 17s. 6d. double, may be obtained from the Secretary. Only dance tickets may be obtained at the door.

CARDIFF AEROPLANE CLUB

The flying times for the week ending January 14 totalled 2 hr. 5 min. dual, 8 hr. 45 min. solo, and 1 hr. tests.

BROOKLANDS

School flying has been considerably more active during the past week, the total flying times being 24 hr. solo and 18 hr. dual. New members are Messrs. G. T. Swann, Harrison, who is taking his "B" licence, and Shillingford, who has purchased his own machine. Cross-country flights were made to Hatfield and Southampton. Mr. G. Lowdell delivered a "Tiger Moth" to Amsterdam and brought back a "Gipsy Moth" for C. of A. The workshops have turned out three C. of A.'s and taken in two more for renewals. Members are advised to book tables early for the dance on Saturday, January 27, when the new bar will be open.

BRISTOL AND WESSEX AEROPLANE CLUB

During the year 1933 the Bristol and Wessex Aeroplane Club completed 1,627 hr. flying, which is a very satisfactory figure considering that only three machines were in use. Twenty-one new "A" licences were obtained and two "B" licences. Mr. R. J. Lee completed tests for an "A" licence during the past week.

READING AERO CLUB

A successful children's party was held during the week-end, Father Christmas arriving in a school "Moth" complete with toys which he presented to the children present. Mr. Hay has joined the Phillips & Powis School, and Mr. Lehmann is piling up hours towards a "B" licence, and has made several cross-country flights lately. He is a well-known glider pilot in Germany, but is now turning his attention to power-driven machines. Two practice parachute drops were made on Saturday last. Mr. Slade, who recently took his "B" licence at the school, has returned and is taking the instructors' course.

A very interesting talk was given by Mr. W. A. Smallcombe, on the subject of the conquest of the air by birds and plants. His slides of prehistoric birds, butterflies and reptiles, all of which flew in one way or another, were very interesting, as were also those of historical and modern aeroplanes.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

About 8 hr. have been flown during the week, including flights to and from Hull, and from London to Yeaton.

EASTERN COUNTIES AEROPLANE CLUB

Mr. F. H. Jolly, whose services as secretary were lost by the Eastern Counties Aeroplane Club, a fact which was reported in FLIGHT for September 21, was not, we are informed, Director and Chairman of the Board, this position being held since the Club's inception in January, 1931, by Maj. M. MacEwan.

LIVERPOOL AND DISTRICT AERO CLUB

The flying returns for the week ending Friday, January 12, totalled 8 hours dual and 12 hours 5 minutes solo. (The year's total of 2,283 hours, given in last week's issue of FLIGHT, should have been recorded as nine months' total.)

AIR SERVICE TRAINING DURING 1933

Since the inception of Air Service Training in 1931, its annual review of progress has shown convincing evidence of the service which it is rendering to the cause of aviation. The past year yields further proof, for during 1933 a total of 6,425 hours' flying was carried out, the month of August alone being responsible for 1,046 hours. Both these figures constituted new records for the school.

Among the 87 civilians and officers of foreign Air Forces who attended the school were nationals of the following countries:—America, Austria, Canada, Denmark, Great Britain, India, Iraq, Norway, Sweden, the Irish Free State, Peru and South Africa.

Certificates of proficiency were issued for courses successfully completed, while the following Air Ministry licences were obtained:—19 "A," 16 "B," six 2nd Class Navigators', seven "W/T" Air Operators', five Ground Engineers', Category "X," and one Ground Engineers', Category "C" and "D."

In April, training of R.A.F. reserve pilots under the new Air Ministry contract was commenced. This necessitated the change over from "service" type to light type aircraft, the Avro "Cadet" (7-cylinder Siddeley "Genet") replacing the "Atlas" and D.H.9.J. The "Cadet" was adapted to perform the numerous practices required under the new training scheme, which included, beside primary and advanced flying, instrument flying, air photography and gunnery. The *ab initio* reserve officer pupils allotted to the school were also trained on this type of aircraft. In addition, the school undertook the training of the R.A.F. reserve seaplane pilots, and in this connection "Cutty Sark" Amphibians (two 7-cylinder Siddeley "Genets") were used.

The long course of three to four years' duration, which is intended for those wishing to make aviation their career, proved a remarkable success. Owing to its popularity, it was found necessary to divide it into terms commencing in January, May and September, the present term commencing on January 16, 1934. Among the pupils at present taking this course are ex-public schoolboys from Rugby, Uppingham, Winchester, Charterhouse, Eastbourne, Malvern, Canford, Blundells and Brighton.

A very important feature of the school is the variety of aircraft available for training purposes. For elementary flying training, the Avro "Cadet" and Avro "Avian" are used. For a Service course, the Avro "Tutor" of the type used extensively in the Royal Air Force for a similar purpose is available. For advanced training, the more highly-powered Armstrong-Whitworth "Atlas" and "Siskin" type aircraft are used, while the Avro 626 is available for wireless work. Pilots wishing to gain experience on multi-engined aircraft made good use of the Avro V (three 5-cylinder Siddeley "Genets"), which proved itself admirably suited to the purpose, and of the "Cutty Sark" Amphibian.

Early in the year the rapid expansion of the school

caused a shortage of sleeping accommodation, so that a new block of quarters containing 14 bedrooms had to be added. This is to be supplemented by a further 15 rooms and, in order to increase the messing accommodation, the A.S.T. Club is being enlarged.

In a career such as aviation, physical fitness is of the utmost importance. With this end in view, organised games were arranged. The winter games consisted of hockey, soccer and squash, and that great keenness was shown by the participants was indicated by the results achieved. Only one squash match was lost, and a fair proportion of the hockey matches were won. With soccer, it suffices to say that, though the spirit was willing, the flesh was weak.

The all-the-year-round sports, namely, golf, clay pigeon shooting and miniature rifle shooting, proved very popular, a trophy for the last named having been presented for competition by E. A. Minchin, Esq., a former pupil at the school.

The ideal situation of the school in relation to Southampton Water facilitated the formation of a yacht club, and a trophy was presented to the Club for competition by Mrs. E. A. Minchin.

The other summer games, tennis and cricket, proved very popular, and a number of matches were played.

JOHANNESBURG AERONAUTICAL ASSOCIATION

One hundred and seventy-four passengers were carried in club machines during the week ending December 24. The flying times for the week totalled 73 hours 40 minutes.



MACHINES FOR THE ENGLAND-AUSTRALIA RACE

MANY Americans appear to think that the United States have as good as won the England-Australia race which is scheduled to start in October next. They point to the number of high-speed civil aeroplanes which America already possesses, and to the fact that so far no British machine is in existence which could hope to compete against them. The same sort of reasoning has also led to a fairly widespread feeling at home that Great Britain may suffer loss of prestige by an American aeroplane having a "walk-over" in the race. On the surface there is some cause for a little alarm, but it would be premature to get "panicky." While it is true that no British aeroplane is in existence at the moment which can be regarded as suitable for the MacRobertson race, several designs have been got out, and the machines can be built if entrants are forthcoming.

During last week the de Havilland Aircraft Co., Ltd., announced that their research engineers have been studying the conditions which govern the England-Australia race (and which, incidentally, are likely to be considerably altered in the near future), and have arrived at what one may term the "ideal" aeroplane for the particular route stages to be covered in the race. The firm very naturally maintains considerable secrecy about the details of the racing machine, but has authorised the statement that a limited number of these machines will be built, and that the price will be £5,000. A deposit of 20 per cent. will be demanded with the order, and the company will guarantee a top speed of at least 200 m.p.h. If that speed is

Mr. Beljon went solo, and there were two cross-country flights, one to Kroonstad on a "Puss Moth" to pick up a man whose own machine was not fast enough for the urgency of his business, and the other to Durban with Mr. T. F. Neale for cross-country practice. Now that the "Gipsy Moth," recently imported complete with hood and blind flying instruments, is available, seven pupils are taking blind flying courses. Mr. G. B. D. Williams, the instructor, is the only civilian instructor of blind flying in South Africa.

LONDON GLIDING CLUB

On Saturday, January 13, soaring was made possible by a S.W. wind, 15-20 m.p.h. The *Kassel* two-seater made three soaring flights, each with a passenger; the *Scud II* and *Prüfling* one each of half an hour, and the *Kassel 20* two of twenty minutes each. The four machines were in the air simultaneously and carried on until the wind backed and the lift disappeared.

A gale blew up during the night, but by Sunday afternoon had reached a reasonable speed of 25-35 m.p.h. from the south-west, its gustiness gradually wearing down. The same four machines then made fourteen soaring flights, six passengers being carried. Total flying time exceeded six hours. Conditions were extremely interesting, especially for repeated landings at the launching point. After sunset the *Scud II* wandered away up-wind and found uncanny lift nearly half a mile in front of the hill. It was just possible to reach the Zoo, but the aerial turmoil there was somewhat excessive and the lift weak.

not attained, the customer will be at liberty to cancel his order, and all money paid by him will be refunded. In order to ensure ample time for development and tests, it is pointed out that instructions to begin construction should be placed before the end of February.

It has been made known that Airspeed, Ltd., have plans completed for a twin-engined machine suitable for the England-Australia race, and the name of Mr. T. Neville Stack has been coupled with the venture. As it is fairly certain that de Havilland will build more than one machine, we are now beginning to get on with the number of likely British entries.

On a recent visit to the Blackburn works at Brough we were privileged to see the designs for some high-speed monoplanes which that company has prepared, and it would be very well worth while for potential entrants for the MacRobertson race to get in touch with the Blackburn Company in order to study these designs, which appear to us to promise very high speeds indeed. We are not at liberty to disclose details, but may point out that not only is a fairly wide range of engine types optional, but the number of engines to be fitted is variable within wide limits, so that potential buyers should be able to suit their own fancies in the matter of power plant.

The list of British designs available is still not exhausted, but sufficient has been said to indicate that if any sportsman is contemplating the entry of a machine in the England-Australia race, he should have no difficulty in getting a suitable British machine.



Gatwick and Gravesend

MR. MAURICE JACKAMAN has already been announced in our columns as Director of the Horley Syndicate, Ltd., a company which was formed back in November last year to acquire the rights and liabilities of Gatwick aerodrome. Now news reaches us that the same company has acquired the controlling interest in Gravesend Aviation, Ltd. Mr. Jackaman will be chairman of that concern and will, therefore, hold the destinies of both Gatwick and Gravesend in his hands. He has admitted that he aims to get as much of the continental air traffic as possible to stop at these aerodromes, and with this end in view is providing everything in the way of up-to-date equipment both for day and for night flying which commercial operators can want. Gravesend is already used by K.L.M. when the weather at Croydon precludes them using that airport, and as Gravesend is seldom fog-bound this is quite frequently. Gatwick, with its proximity to the railway station and the frequent electric railway service to

Victoria, rivals Croydon from the point of view of getting passengers quickly between it and the centre of London, while from a flying point of view it is superior as it lies to the south of the Redhill range of hills and out of the London fog area. A fast and frequent air service between there and the Continent should do well.

A sensible safety measure

It is with the greatest pleasure that we learn of the decision of the Cirrus-Hermes Engineering Co., Ltd., to fit all their engines with electric inertia starters as standard equipment. This will obviate the objectionable and dangerous necessity for "swinging the propeller" by hand, and should do a very great deal to enhance the value of these engines all over the world. It will be remembered that the Caple electric inertia starter was fully described in FLIGHT for March 9, 1933. This was designed by Mr. A. H. Caple and Mr. C. S. Napier, and originally made by the Cirrus-Hermes Engineering Co.

Airisms from the Four Winds.

Air Comm. Kingsford-Smith

AIR COMM. SIR CHARLES KINGSFORD-SMITH has made his third eastward crossing of the Tasman Sea. He left Sydney on the morning of Saturday, January 13, flying his machine *Southern Cross*, and accompanied by Mr. Taylor and Mr. Stannage. Flying through very bad weather, which at times compelled him to descend to within a few feet of the water, Sir Charles arrived at New Plymouth, New Zealand, at 7.35 p.m. local time. The flight over the 1,200 miles crossing of the Tasman Sea took just under 15 hr. 30 min. Incidentally, it is pleasing to note that although the *Southern Cross* is a German machine fitted with American engines, English plugs manufactured by K.L.G. were used on this flight.

It is reported that Sir Charles has decided to purchase a Lockheed-Altair low-wing monoplane in which he will compete in the air race from London to Melbourne in October of this year.

Lord Londonderry's air tour

LORD LONDONDERRY, the Secretary of State for Air, who is making an air tour of the R.A.F. stations in India, arrived at New Delhi on January 10, after having flown by Imperial Airways from Calcutta. He was accompanied by Lord Ratendone, Lord Willingdon's son. On January 12 the Secretary of State flew to Lahore, and on January 13 arrived in Peshawar escorted by nine Hawker "Harts."

Colonial Secretary's air tour

SIR PHILIP CUNLIFFE-LISTER, the Secretary of State for the Colonies, who is paying a visit to East Africa, arrived at Khartoum by air from Wadi Halfa on Tuesday, January 9. Accompanied by Air Vice Marshal C. L. N. Newall, he flew south in a R.A.F. machine to Malakal, where he arrived on the following day. On January 11 the Secretary of State continued his flight to Juba, and on the following day arrived at Entebbe, Uganda.

Pension for Hinkler's mother

THE Australian Government has granted a pension of £104 a year for life to Mrs. H. A. Hinkler, the mother of Sqd. Ldr. Bert Hinkler. This pension has been awarded as an official recognition of Hinkler's "valiant contribution to the development of aviation."

Trans-Pacific formation flight

SIX United States naval flying boats have flown non-stop from San Francisco to Honolulu and claim that they have accomplished the longest formation flight. The distance across the Pacific between these two points is 2,100 nautical miles, and the flight took 24 hr. 19 min. The

machines, "Consolidated" sesquiplane flying boats, with two Pratt & Whitney "Hornets" each, left the American coast on Wednesday, January 10, and arrived over Honolulu during the evening of the following day. The flight was commanded by Lt. Com. McGinnis. Each machine carried wireless, a crew of five, and a collapsible boat; six naval vessels also patrolled the route.

The French survey flight to Africa

M. LOUIS COUÉ and Sadi Lecointe, who were to have left France on January 15 in the Nieuport "Colonial" machine (three Lorraine 300-h.p. "Algols") for a survey flight of the African connection to the Belgian Congo, have postponed their departure. Preparations and formalities have not been completed in time. Lefèvre will shortly go out to Algiers to take over one of the two SPCA three-engined machines, which will be used in the experimental connection between Antananarivo and Broken Hill, which lies on Imperial Airways' route to Capetown.

A new Potez

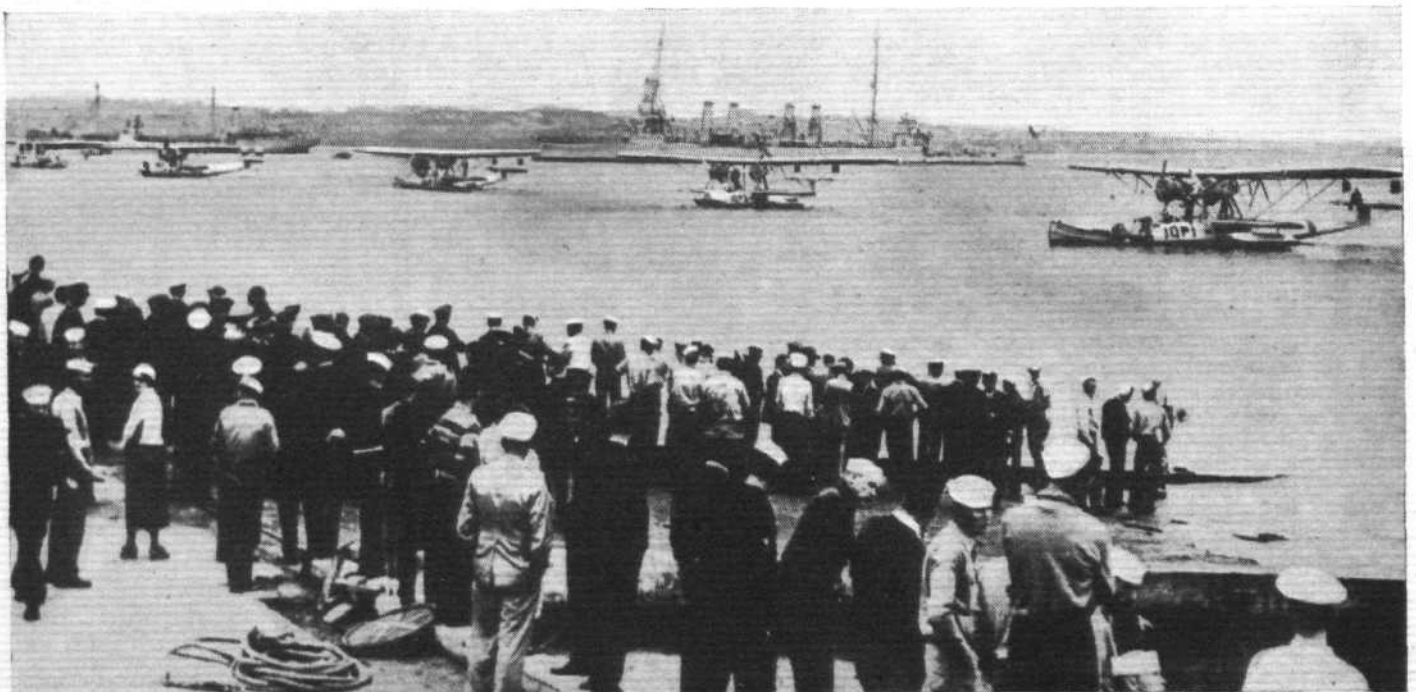
THE latest small civil aircraft produced by the Potez Aviation Works is the Potez 58 "touring" machine developed from the well-known type 43. The new machine, which will be fitted with a Potez engine of 140 h.p., is expected to have a top speed of 118 m.p.h. and a cruising speed of about 100 m.p.h.

The Breguet demonstration

THE Breguet 413 "multiplace de combat" machine which is being demonstrated in Central Europe by Dieudonné Costes has visited Athens and Istanbul. The machine is now flying home and has landed at Belgrade. Prague and Bucharest have yet to be visited.

A "Dolphin" for a French private owner

RECENTLY we stated that M. Armand Esders, a wealthy French aviation enthusiast, had gone to America to buy a Northrop "Delta." We now understand that M. Esders has not bought a "Delta" after all, but has acquired a Douglas "Dolphin" amphibian. The machine is similar to the "Dolphins" used by the U.S. Coast Guard, but is fitted with two 550-h.p. "Wasps," which give the machine a top speed of 170 m.p.h. and a cruising speed at 75 per cent. full power of 150 m.p.h. The range in "overload" condition is 1,200 miles, the ceiling with one engine is 4,000 ft., and with both engines, 22,000 ft. Two-way wireless equipment is provided, and one of the three chairs with which the cabin is fitted may be used as a bed. The name *Jade Blanc V* has been given to the machine, which is to be flown to New York and shipped to France.



THE U.S.A. FORMATION FLIGHT: Five of the six "Consolidated" flying-boats of the U.S. Navy which flew non-stop from San Diego to Hawaii—2,100 miles.

The new French speed records

We have now received a few more details regarding the speed records which have been established by the French pilots Delmotte and Masotte during the past fortnight, on the Caudron C.362 "Coupe Deutsche" machine. Delmotte, it may be remembered, established three records; over 100 km. (62½ miles) at 334.6 km. per hr. (209¼ m.p.h.), over 500 km. (312½ miles) at 333.5 km. per hr. (208.4 m.p.h.), and over 1,000 km. (625 miles) at 332.8 km. per hr. (208 m.p.h.). The machine was fitted with a special Renault "Bengali" engine. Delmotte thus won the prize of 50,000 francs offered by the French Air Minister for the establishment of a new light aeroplane record over 1,000 km. to be made before December 31, 1933. Eligible machines were to weigh less than 450 kg. (990 lb.) empty, and were to have a speed of more than 200 m.p.h.

On January 6, Louis Masotte, also flying a Caudron C.362, but using a Regnier six-cylinder inverted air-cooled engine of 205 h.p., flew over the same 1,000-km. closed circuit as Delmotte in 2 hr. 47 min. at a speed of 224 m.p.h. Both versions of the C.362 were fitted with Ratier variable-pitch airscrews. This make of airscrew seems to be giving really excellent results in France. We mentioned last week that in his record-breaking flight Delmotte took off in 15 sec., although his machine was loaded to more than 20 lb./sq. ft. A later report states that the take-off occupied but 13½ sec., requiring a run of about 1,600 ft. When, last May, the machine was equipped with a fixed-pitch airscrew, the take-off run was 3,225 ft., occupying 22 sec. For the Coupe Deutsche race the Caudron could carry fuel only for about 312 miles and was obliged to make landings in each of the 625-mile sections of the course. When the variable-pitch airscrew was fitted the machine was enabled to carry fuel for a flight of 625 miles non-stop. The following are the main data regarding the Caudron C.362:—Wing span, 22 ft.; length, 23 ft.; height, 5 ft. 9 in.; wing area, 75 sq. ft.; weight (with Renault "Bengali" engine), 928 lb.; weight (with Regnier engine), 1,056 lb.; useful load, 1,704 lb.

Missing honeymoon couple safe

A HONEYMOON couple, Mr. and Mrs. Stewart, who have been lost since they left Moosonee to fly to Port Harrison, the most northern railhead in Ontario, on December 20, have been reported to be safe at Port Harrison.

The Latécoère flying boat

THE French Latécoère flying boat, *Croix du Sud*, which recently flew the South Atlantic, piloted by Capt. Bonnot and Lt. Jean Pierre, has set out to fly to Rio de Janeiro.

A cheap American machine

A REPORT from America states that the General Aviation Company is working on plans for the mass production of a machine which will be marketed at about 700 dollars (about £140).



WOMEN'S AUXILIARY SERVICE: Commandant Mary S. Allen, chief of the "Women's Auxiliary Service," has completed arrangements for the instruction of members of the Service in flying, and has appointed Mrs. E. Battye to be her own personal pilot, and the instruction will be in the hands of an ex-R.A.F. officer. Commandant Allen is herself very keen on flying, and has already done a number of hours under instruction. Left to right—Mrs. E. Battye, Commandant Mary S. Allen, and two members of the Women's Auxiliary Service who are under instruction photographed with their machine at Reading Aerodrome. (Photo British Aviation Pictures.)

Marshal Balbo

AIR MARSHAL BALBO left Naples on Sunday, January 14, to take up his duties as Governor of Libya.

A new Bibesco military trophy

SINCE the Bibesco Military Trophy for 1933 was won by Italy with a Fiat AR.30 two-seater, Prince Bibesco has offered another trophy for a race between Brussels and Bucharest, reserved for Belgian and Rumanian military pilots. The rules of the race are still under consideration, and Prince Bibesco is consulting the chiefs of the Air Services concerned. The race is to be flown in June.

Skis for commercial aircraft

FOR several years Dr. Rohrbach has collaborated with the Deruluft company in the design of retractable skis which may be mounted together with the ordinary wheel undercarriage of an aircraft. This year, for the first time, the Deruluft company has equipped its machines with this device to facilitate landings on the snow-covered airports used during the winter. We hope soon to give details of this interesting undercarriage.



REALLY AIRMINDED: The Secretary of State for Air, Lord Londonderry, and his family, who spent a holiday in Egypt during Christmas, photographed at Cairo after having flown from Alexandria by Misr-Airwork Egyptian Air Lines. Left to right are Lord Londonderry, Lady Londonderry, Lady Mary Stewart, Lady Margaret Stewart, and another daughter. All the family are air-minded, and the four whose names are mentioned fly as pilots regularly at Heston. Lady Mary Stewart is only 12 years old.

Airport News.

CROYDON

WEATHER conditions, though unpleasant, have been considerably better during the past week, and most services operated as usual. Amongst travellers of note were young David Schwartz, aged 8, who travelled unaccompanied from Paris and seemed to thrive on the roughish weather encountered. Rumour has it that his schoolboy appetite did not falter during the journey, and he was still able to "sting" a well-known Airport journalist for several lemonades as some small return for granting an interview. Mr. Schwartz, senr., is a well-known air line traveller, and when he found himself detained in France he handed his boy over to Capt. Rogers, of Imperial Airways, Ltd., who not only flew him to Croydon, but "delivered" him in his car at his home in Wimbledon. It is, as a matter of fact, more usual than the daily newspapers would have us believe for school children to travel by air unaccompanied, and on several other lines, notably to Holland, Prague and Scandinavia, children "in charge of the guard" are fairly frequently seen in summer. The annual Airport of London passenger figures for all companies are the largest ever known. In 1933 no less than 87,539 travellers passed through the Airport. It is gratifying to record that some 65 per cent. of this total was transported by Imperial Airways, Ltd., the British company.

On Wednesday last the first all-British air mail from Singapore arrived at Croydon, with 52,000 letters collected from various places along the route. Miss M. E. Brooke, a lady journalist who flew to Delhi for Christmas, returned to Croydon recently. Her trip, she said, was in the nature of an experiment—a most successful one—which had determined her in favour of flying, and especially of the short air holiday. Miss Brooke is over 70, and on the same machine was wee Johnnie Morrison, 10 weeks old, travelling from Basra with his six-year-old sister and mother. Air travel would seem to suit people of every age and sex. The baby slept most of the way, and was actually asleep when disembarked, complete with cot, on the Croydon tarmac.

It is difficult to think back to the days before the aeroplane became the servant of man, though its useful career is indeed but beginning. Quite simple every-day incidents illustrate this best perhaps. Last week, for example, some important "test films" connected with a visit to America of Miss Evelyn Laye missed the boat at Southampton, and were flown to Cherbourg by Mr. A. S. Wilcockson, of Imperial Airways, Ltd., in the special charter, Westland "Wessex." The machine, with a Customs clearance

official on board with the necessary documents and information required by the French Customs, left Croydon at 12.58 a.m. and arrived at Cherbourg at 2.45 p.m., allowing more than sufficient time for the parcel to be got aboard before the boat weighed anchor at 7.0 p.m. Several of the old-timers of the civil aviation game were delighted to see Brig. Gen. Sir Francis Festing, at one time a director of Aircraft Transport & Travel, Ltd., when he passed through the Airport en route for Copenhagen by K.L.M. on Thursday last. On Tuesday morning, after these notes have gone to press, there is to be an interesting meeting, called by the Air Ministry to discuss the use of a radio beacon at this Airport. I learn that there are a number of widely divergent opinions on this subject. For one thing, the immense number of aircraft in the Air-France fleet, any one of which may come on to this route at any time, would make the fitting up of all these machines for radio beacon flying a very expensive item. Both in Berlin and Amsterdam the system is working admirably, I am informed by pilots flying those routes, but in both cases the pylon is only a few feet high and forms no obstruction on the aerodromes. If there is no absolute need for so tall a mast in so dangerous a position at Croydon, one of the first questions to be asked at the meeting will doubtless concern its immediate removal to a more suitable position.

A. VIATOR.

FROM HESTON

MR. CHARLES KUNZ, leader of the Casani Club's dance orchestra, arrived at Heston by air on January 11, fifty minutes before he was due to broadcast on the London National Programme.

Frantic messages from members of his orchestra were received during the day by the Heston traffic staff, who rushed Mr. Kunz to a waiting car in a matter of a few seconds. Mr. Kunz left Liverpool at 2.25, arrived at Heston at 4.25, and commenced his broadcast at 5.15. The flight was made in very rough weather, and the aeroplane, a "Gipsy III Avian" belonging to the Liverpool and District Aero Club, was flown by Mr. Clapham, who spent the night at the Airport Hotel.

The British Air Navigation Company transported Mr. John Loder, the film star, to Paris on January 6 to watch the "premiere" of his new film, "La Bataille."

Mr. W. Lindsay Everard's "Dragon" returned to Heston on January 7 from the Egyptian Oases meeting. It was flown by Mr. W. D. MacPherson, who piloted it to victory in the Oases Trophy.



Seaplane base for Londonderry

At a meeting of the Londonderry Harbour Board, held on Monday, January 15, it was stated by the Chairman, Mr. R. H. Smyth, that the British Air Ministry had decided to establish a seaplane base on the River Foyle at Londonderry. It will be remembered that the Italian Armada alighted on the waters of this river.

Night flying without lights

UNTIL March 31, Royal Air Force aircraft, except within the controlled zone scheme already referred to in our pages, if in force, may be flying by night daily (Saturdays and Sundays excepted) from one half-hour after sunset until three and a-half hours after sunset over the area bounded by straight lines joining Addington, Sevenoaks, Oxted, Addington. Above an altitude of 5,000 ft. navigation lights will not be exhibited unless other aircraft are observed in the vicinity.

Landing grounds no more

ACCORDING to the latest notice received from the Automobile Association in connection with their Register of aeroplane landing grounds, Gleneagles landing ground has been ploughed up, and that at St. Albans, Herts, has been sold for building purposes. The schedules of both these should, therefore, be withdrawn from the Register.

Air service to Canary Islands

AN air service has been opened between Seville and the Canary Islands. The machines to be used are three-engined aircraft, will carry mails and passengers, and will make a stop on the African coast at Cape Juby.

To Paris without passports

It is reported that arrangements have been made between the British and French Governments by which passengers making week-end flights between London and Paris will be allowed to dispense with passports. This will mean that passengers on Imperial Airway machines will be able to leave London or Paris on a Friday without passports and return at any time up to the following Tuesday.

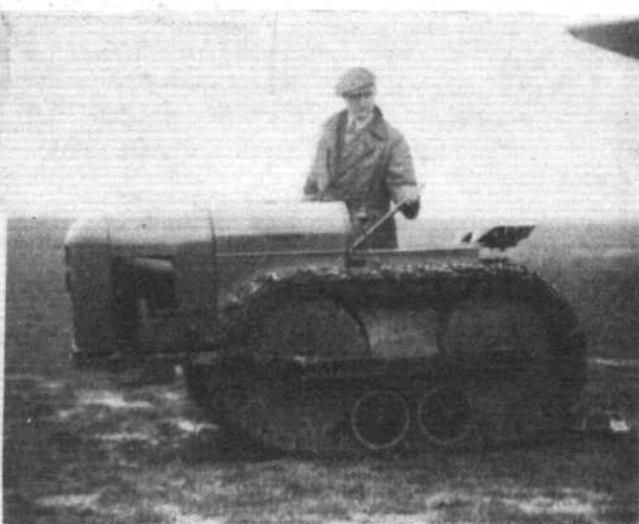
Federation of British Industries

At a meeting of the Grand Council of the Federation of British Industries, held on Wednesday, January 10, Lord Herbert Scott, C.M.G., D.S.O., D.L., was nominated to succeed Sir George Macdonogh as President of the Federation for the coming year. Lord Herbert Scott is also a Director of Rolls-Royce and Cellulose Acetate Silk Co.

Postponed lecture

THE lecture before the Royal Aeronautical Society by Capt. A. G. Forsyth, announced for Thursday, February 8, 1934, has been postponed until Thursday, April 5, 1934.

THE BRISTOL TRACTOR



AN unusually interesting and efficient little tractor was demonstrated at Heston recently. The machine, which is all-British, is manufactured by Bristol Tractors, Ltd., of Quality Court, Chancery Lane, W.C.2, and is being marketed at £175. Compared with the average tractor, the Bristol is very small; in fact, the model demonstrated at Heston, *i.e.*, the standard model, is only 35½ in. wide and 6½ ft. long. For special requirements the width of the tractor may be increased to 60 in. overall. The weight is just over a ton. It is claimed that the Bristol is the only tractor in the world with front sprocket drive, and, as the centre of gravity is well in front of the mid-position of the track, the ground holding properties are quite remarkable. Another very interesting feature is the "stretch proof" track patented by Roadless Traction, Ltd., the joints of which consist of hard moulded rubber blocks, which hold the plates of the track apart instead of together as do the joints in tracks of conventional design. The driving power required is much less than that required in the average tractor. Nowhere in the track is there any contact of metal, and consequently an unusually long period of service is obtained. The National Physical Laboratory has tested the track for the equivalent of 38,000 miles at a speed

of 30 m.p.h. (about ten times the ordinary operating speed of the vehicle), and reported that at the end of the tests there were no signs of wear or disintegration. A twelve months' guarantee is given for the track.

The engine fitted is a specially designed air-cooled "V" with a rated h.p. of 9.8, developing 18 h.p. at 1,800 r.p.m. Three forward speeds and a reverse are provided, and the draw-bar pull in first gear at 1 to 1.8 m.p.h. is about 2,100 lb. For stationary work a belt pulley may be fitted as an additional item of equipment. A "joystick" type control is used for steering, and a decelerator button fitted to the control handle gives the vehicle exceptional powers of manoeuvre. It will turn in its own length. The machine seems particularly well suited for aerodrome work. It will operate over the tightest tilth without "packing," as the load is less than 4½ lb. per sq. in., but what should be of particular interest to aerodrome operators is the ease with which it handles heavy aircraft. At Heston the big Ford 5 A.T. belonging to B.A.N.C.O. was used in a convincing demonstration of the hauling power of the tractor. We understand that at a recent demonstration of various kinds of tractors at Selbourne before several celebrities in the agricultural world the Bristol outclassed all the other tractors present by pulling a 2,100 lb. load.

Petrol from coal

In the issue of *FLIGHT* for July 27 of the year 1933 there was an article under the same heading as above by E. Nugent Head. The following is an extract from it: "The annual petrol consumption of the Royal Air Force is about 6,000,000 gallons per annum, which means that Britain's air arm could be made self-sufficient as regards fuel by the carbonisation of 300,000 tons of coal a year, which figure has already been passed, and quite a small amount compared with the 40,000,000 tons that are burned domestically in this country annually! If only 50 per cent. of these millions of tons were carbonised annually and the resultant oil hydrogenated, our petrol import would drop by 400,000,000 gallons, and many thousands of men at present unemployed would find work." It would now appear that this little prophetic vision is in the process of becoming fact. The Royal Air Force has been supplied with petrol obtained from coal during the past year, and a whole squadron has been flying on it. The production of this fuel is in the hands of Low Temperature Carbonisation, who are considering the Forest of Dean and the Lancashire coalfields for the erection of two new plants to use 300,000 tons of coal. Already 1,000,000 tons of coal have been carbonised and 100,000 tons of oil and petrol made from it. The whole output of the company has already been sold out for the New Year. As mentioned in the quoted paragraph above, this may give employment to thousands of miners, and do something to revive an industry which, for some time, has looked like being buried by the latest inventions of modern chemistry.

Autogiros for Army use

The possibilities of the "Autogiro" for various kinds of military and naval work have for some time past been carefully watched by the authorities of the fighting Ser-

vices, and the performance of the direct-control type, known as C.30, made a deep impression on the said authorities. Last year it was decided to procure a number of these machines and make practical tests with them in Army manoeuvres. However, the C.30 was still in the experimental stage, and the plan had to be modified. Ultimately two C.19 "Autogiros" were ordered and were used on manoeuvres. The manoeuvres last year were on a small scale, and two "Autogiros" did not afford sufficient data for the drawing of definite conclusions. The experiment was, however, sufficiently promising to justify further tests on a larger scale. The Air Ministry has accordingly decided to order a number of C.19 "Autogiros" for use with the Army during 1934. No contract has yet been placed, and the precise number to be ordered cannot be stated. It is most probable that one "Autogiro" will be supplied to each of the five Army Co-operation squadrons in this country for use in reconnaissance and communications. Another will probably be supplied to the School of Army Co-operation at Old Sarum, to be placed at the disposal of the Royal Artillery during the manoeuvres for artillery observation work. Manoeuvres will, of course, not show whether the "Autogiro" is more or less vulnerable to shell fire and small arms fire, but they will undoubtedly teach useful lessons as to the comparative usefulness of the "Autogiro" and the aeroplane for the various tasks of reconnaissance, artillery observation, and communications. For communications in one's own lines it seems fairly certain that the "Autogiro" should be able to play a very useful part, and likewise for reconnaissance of the ground before a battle is joined. Of its usefulness for other work we shall be better able to form an opinion after the experiments. It is certainly a very good thing that such experiments should be undertaken.

Correspondence.

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

THE ENGLAND-AUSTRALIA AIR MAIL

[2906] To the air-minded population of Britain, the lack of interest in the forthcoming opening of the England-Australia air route has been disappointing.

What little interest has been shown has been directed more towards the sensational flights of the Dutch and French air lines, rather than on the less spectacular, but more steady and profitable, work of Imperial Airways.

Higher speed will mean higher subsidies; if we want to spend more, a more frequent service would be of greater value to the Empire, and would bring quicker returns. When the public put enough pressure on the Government and all first-class mail matter is sent by air, at least three services between London and Australia and Cape-town every week will be necessary, as it is quite evident that business men will no longer be able to afford the time to travel by steamer.

Three planes per week each way, with a load of 25 to 30 passengers and from 1½ to 2 tons of mail, will not be adequate for long on the Australian route, in view of traffic potentialities.

At a later date it may be possible to introduce, in conjunction with the slower passenger and mail service, a high-speed weekly service, mails only, flying day and night and doing the journey in half the ordinary flying time.

This service would be costly, but even charges of, say, 5s. per ½ oz. would not be too much for business people to pay in view of the extra time saved.

London, W.2.

WALTER L. NAYLOR.

January 11, 1934.

"IN ANOTHER PLACE"

[2907] I am sorry that my attempt to put a very small cat among the pigeons was taken so seriously. Unfor-

tunately, the Postmaster-General removes any trace of an implied smile from the missives which pass through his hands, and I can only add the word "intellectual" to "honesty" by way of apology. As a nation we are particularly prone to believe what we want to believe, and the misguided "foreigner," reading the reports of, or remarks on, Lord Londonderry's speech, can only shrug his shoulders and say, "These always so perfect English! Just as if nobody else in the world can make an honest gesture."

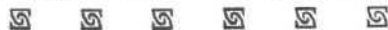
Now, taking the points of your reply. If we allow that the Russian offer, for instance, was merely an attempt to call our bluff, we are laid open to the remark that we surely should have no bluff to be called! When nations are frightened of one another, the panic of the sanest can be most devastating, and we, as taxpayers, do not want another armament race similar to that in the years before 1914. If the nations take the trouble to equalise their armaments, they may as well disarm on an arithmetical basis of reasoning. For a very good reason, which you would not trouble to argue with, you and I have, as citizens, agreed not to carry arms, and it seems a pity that nations cannot be as intelligent as individuals.

However, I retain an open mind, but if something *does* start, both of us will wish that these dangerous toys had been buried, for the just and the unjust will die together in a most uncomfortable manner and with equal alacrity. The "modern" war, fortunately, is no respecter of persons, and if a nation considers that its "pride" is worth the loss of the flower of a generation, then, in sheer despair, I shall hurry to my appointed end along with the others.

H. A. T.

Manchester.

January 5, 1934.



Book Reviews.

Medical Notes and First-Aid Treatment for Flights in the Tropics and Sub-Tropics. (Air Publication 1,486.) Published by H.M. Stationery Office. Price 4d., postage extra.

THIS little booklet deals with all the principal diseases and ailments which are prevalent in the Tropics and Sub-Tropics. It is not written in medical phraseology, but in simple language for all to understand. It is a very useful booklet, and could be carried about by pilots flying in the Tropics and Sub-Tropics with great advantage. It is not everyone who has the knowledge of a medical student, but it is essential for a pilot flying in the Tropics to possess some knowledge concerning the prevention and remedy of maladies which, if not dealt with at once, may develop into something really serious. This little book supplies such knowledge.

The Aeronautical Work of Lawrence Hargrave. By T. C. Roughley, B.Sc. Published in Sydney, Australia, by Alfred James Kent, I.S.O. Government Printer. Price 1s.

LAWRENCE HARGRAVE is a name which is known to a few of the younger generation of air enthusiasts. Even among the older generation, although he may be remembered, even revered, it is doubtful whether true reward is given to what aviation of the present day owes to the genius of his early experiments. Lawrence Hargrave was born in England in the year 1850 and went out to Australia when he was 16 years of age. The rest of his life was spent, and the whole of his technical training received in Australia, and so he is usually regarded and may be justly claimed as an Australian.

The aeroplane was not "invented" by any single experimenter; it gradually evolved as the result of the

progressive efforts of many dauntless pioneers, some of whom lost their lives in the cause. Lawrence Hargrave can certainly be reckoned as one of these pioneers. His first experiments were with models consisting of one large surface, but he soon discovered that the tail unit should be separate from the main planes. For propulsion he relied on an airscrew or flapping wings. Two models were constructed by him, one with an airscrew and the other with flapping wings. Careful calculations were made of the relative weights, area, power, and the distance flown, with the result that as propellers, the screw and flapping wings were found to be about equally efficient.

After a time Hargrave decided to turn his attention to motive power of a more mechanical nature and designed the first rotary engine. Three cylinders were arranged on the arms of a three-bladed airscrew, and so the forerunner of the celebrated French "Gnome" engine came into being. Yet how many people are there who realise that this invention owes its original conception to Hargrave? Universal ignorance on this point is due chiefly, no doubt, to Hargrave's lack of commercial interest in his designs; he never applied for a patent and never desired to protect his inventions in any way. The first thought in his mind was the advance of aviation in which he had an implicit belief and unbounded enthusiasm.

Between the years 1884 and 1893, he devoted his time principally to the design of aeroplanes with flat supporting surfaces, but in 1892 he turned his attention to curved surfaces and so it can be claimed that he was the first man to discover that wings cambered at certain angles produced more lift than flat surface wings.

Criticism has been levelled against Hargrave in that he allowed many of his models to find a final resting place in Germany. The Australian Government, however, were

much to blame for this. It is probable that his final decision was made as a result of the fact that he looked upon the development of aviation from the view-point of civilisation, rather than from a national one. He desired his work to benefit mankind, and countries and border lines had no place in his vision. He believed that in Germany would his models be most easily available to students and engineers from all over Europe. It was an ironic stroke of fate which decreed that his only son should be killed by a bullet fired from a German machine, the design of which, no doubt, owed more than a little to the genius of its victim's father.

This little booklet is well worth reading; it is cheap to buy, it can be read in a very short time, yet it is full of interesting facts and very instructive.

... *Something New Out of Africa.* By H. W. (Sir Isaac Pitman & Sons, Ltd.) Obtainable from FLIGHT Office. Price 15s. 9d., post free.

TO all who love books of travel, Wing Com. E. L. Howard Williams, M.C., has provided a very great treat. Lord Mottistone says in his Preface: "This is a remarkable book." So it is, but it is still more. It is a delightful book, and its charm is infinitely increased by 108 illustrations from photographs and four sketch maps of air routes in Africa. When one first picks up the book one's eye is at once caught and attracted by the pictures, and they are so good that it would be impossible to praise them too highly. The majority are views from the air, probably taken on some of the many flights led by the author. There are pictures of places, of which perhaps the most striking are those of the deserted island-city of Suakin. There is a whole series of interesting studies of African natives. There are pictures of Royal passengers carried in the Fairey III F. machines of the author's squadron, namely, the Prince of Wales (who has permitted the book to be dedicated to him) and the King of the Belgians. Most unique of all is a magnificent series of pictures of big game photographed from the air—elephants, buffaloes, giraffe, zebras, and antelope. A finer collection of such pictures has surely never been published! Not the least interesting is a set of photographs illustrating the work of floatplanes as "revenue cutters" in the Red Sea, stopping and examining suspicious boats which might be smuggling drugs or arms.

Not until one has thoroughly revelled in the illustrations can one turn to the letterpress. Then another and equal treat is enjoyed. For three years the author commanded No. 47 (Bomber) Squadron, which is stationed at Khartoum, and in the ordinary course of his manifold and varied duties he led his Fairey machines, sometimes as landplanes and sometimes as seaplanes, up and down the Nile and over vast tracts of the Sudan, Uganda, and Kenya. His greatest achievement was in 1930 to lead a flight of three machines from Port Sudan, on the Red Sea, right across to Bathurst in Gambia, on the shore of the Atlantic.

Officers and men of the Royal Air Force overseas have the privilege of seeing ancient lands from a totally new point of view. The author writes: "There is an advantage that some of us are able to see more in the time than we should otherwise see, admittedly superficially, but perhaps to get a less local view of the bigger problems in consequence." Not a few of these officers make a serious study of the lands which they see in the course of their duty, and "H. W." is a man of that sort. He has studied Northern and Central Africa. He describes the different policies adopted by the British, the French, and others towards their African subjects, and he insists that the keynote of British policy and practice in Nigeria, Sierra Leone, the Gold Coast, and the Gambia is "native administration for the benefit of the natives themselves." In East Africa, too, our policy is to rule through the native chiefs. He explains, without either praise or criticism, the very different policy of the French, Italians, Spanish, and Portuguese. As described by the author, the problems of Africa are of intense interest, and his happy style of writing avoids all suspicion of dullness when treating of deep and serious matters.

With excellent judgment, the author has avoided giving us too much "flying shop." Some adventures due to forced landings on the Sudd of the Nile and by coral

islands in the Red Sea make lively reading. But flying is itself no longer a marvel; it is only a means to an end, and the end is more important than the means. The greatest problem of Africa is communications, and the author is surely justified in holding that aircraft are the best solution of that problem—in fact, the only practical solution of wide application.

This book should give pause to those who thoughtlessly clamour for the abolition of all armed air forces. There is no fighting in the book; only constant work of an administrative kind, mainly carried out for the benefit of the colonial administrations. At Geneva, Great Britain, in proposing universal air disarmament, stipulated that she should retain her "police" bomber squadrons, and in certain quarters was abused for making that reservation. To those who levelled the abuse there could be no more effective answer than this volume.

Capt. Albert Ball, V.C., D.S.O. (two bars), M.C. By R. H. Kiernan, with a Foreword by Air-Marshal Sir J. F. A. Higgins, K.C.B., C.M.G., C.V.O., D.S.O., A.F.C., and an Introduction by H. A. Jones, British Official Air Historian (John Hamilton, Ltd.). Obtainable from FLIGHT Office. Price 9s., post free.

THE personalities of the great air fighters of the war are a study of interest to all, and of those on the British side none captured the imagination more than Albert Ball. He had a strange and brief career. When the Somme offensive opened in July, 1916, he was still rather an immature pilot, who had earned a reputation as being keen, but rather difficult for a squadron commander to handle. He was then with No. 11 Squadron, flying a Nieuport, his favourite machine, with a Lewis gun which fired over the top plane. When he felt tired and nerve-fagged, he said so frankly and emphatically, and was accordingly sent to No. 8 Squadron, which had B.E.2C's. He hated that machine, and told General Trenchard, "It's a b— awful machine." Then in August he got back to No. 11 Squadron, and three weeks later he was transferred to the famous fighting unit, No. 60 Squadron. With this squadron he did his best work, and by the end of the year he was considered the greatest fighter pilot in the R.F.C. During the Somme, the R.F.C. achieved a greater degree of air supremacy than was ever achieved by any side in the rest of the war, and Ball was the outstanding figure, decorated with a Military Cross and the D.S.O. and bar. The German flying corps was completely beaten, until Boelcke organised their fighters. Doubtless that was why Ball wrote to his father: "Yes, I always let them have it all I can, but really I don't think them devils. I only scrap because it is my duty, but I do not think anything bad about the Hun. He is just a good chap with very little guts, trying to do his best." He also wrote: "Nothing makes me feel more rotten than to see them go down."

Ball hated flying in company. He liked to go out alone, manoeuvre into the blind spot underneath a German machine, and shoot upwards with his Lewis. He would attack any numbers, and usually sent one down out of control before his presence was discovered. Then he was too busy to follow his victim down. He was very prodigal of ammunition, and frequently flew home with his drums empty and his machine all shot about.

After the Somme he was sent to England, loudly protesting, and kept on instruction work. In April, 1917, he was sent to No. 56 Squadron in France, and at first grumbled mightily at having to fly a S.E.5A., though presently he got to like it and its two guns. In the battles of Arras he commanded a flight, but one imagines that command was not his strong point. He only lasted for a month, for on May 7 there was a "dog-fight," and Ball was seen to disappear into a cloud, fighting a German. He crashed by the village of Annœullin. His actual fate is a mystery, but Lothar von Richthofen was in the dog-fight and the Germans credited him with having killed Ball. After his death he was awarded the Victoria Cross.

This book is better than some war biographies. It gives details of Ball's methods in the air, tells what squadrons he belonged to and what machines he flew. It paints a lovable character, but it might have done this equally well without publishing so many intimate letters from the hero to his mother.

Potez engine begins its tests

THE horizontally-opposed water-cooled engine exhibited

on the Potez stand at the last Paris Show recently made a one-hour run at 2,400 r.p.m., developing 315 b.h.p.

AIRCRAFT FURNITURE

DESIGNERS of civil aircraft are hard people to please; they wish the passengers in their machines to be perfectly comfortable, but can devote very little weight to the cabin furniture. The firm of L. A. Rumbold & Co., of Kingsgate Place, Kilburn, N.W.6, is the answer to a designer's prayer. Rumbold chairs, tables and other items of cabin furniture are incredibly light, yet they lose nothing in comfort and efficiency against the older and heavier equipment. Many of our finest civil aircraft are using Rumbold furniture. The Vickers "Viastra" belonging to H.R.H. the Prince of Wales, for example, is fitted with Rumbold chairs, the

a standard Irvin seat pack type parachute, has been specially developed for Mr. Leslie Irvin, of the Irving Air-chute Co.

The amount of "knocking about" received by chairs in passenger aircraft is quite amazing. When a machine is at rest on the ground and the cabin floor is at an angle, passengers who wish to get to the forward seats instinctively hold on to the chairs to help themselves up the incline. Such treatment day in and day out demands very strong furniture. For machines in which provision is made for safety belts, the Rumbold chairs are tested to stand a belt strain of 1,100 lb., and all this for a weight



SOME RUMBOLD CHAIRS: Left, a new chair weighing $6\frac{1}{2}$ lb. standardised by the de Havilland Aircraft Co., Ltd., and A. V. Roe & Co., Ltd. Centre, the back seats of a De Luxe "Dragon." Right, a chair for the "Viastra" belonging to H.R.H. the Prince of Wales.

backs of which are adjustable to any angle. These chairs can be made to face either fore or aft and can be used as beds as occasion requires.

The Percival "Gull" belonging to Sir Philip Sassoon is fitted with a particularly comfortable Rumbold chair for the personal use of Sir Philip.

It is not so much in the machines of private owners, however, as in passenger aircraft in regular service that Rumbold products prove their worth. A.W. "Atalantas," Saro "Clouds," Airspeed "Ferries" and "Couriers," Avro 10's and 642's, and the two new Boulton & Paul machines for Imperial Airways are but a few of the types in which Rumbold equipment has been or is being installed. During the past year several foreign countries, including America, Holland, France and Poland have shown interest in Rumbold products. Up to the present most of the articles of furniture supplied by the firm have been designed and built to order. Not long ago a well-known aircraft firm asked for a type of Rumbold chair to replace the seat of their own design and construction already fitted in a small cabin machine. The Rumbold chair proved less than half as heavy and certainly lost nothing in comfort. Again, an additional seat was required for the Ford 5 A.T. belonging to B.A.N.C.O. A Rumbold chair was produced to exactly the same design as the American chairs already in the Ford, but was 9 lb. lighter.

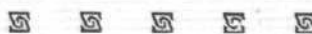
We inspected several very interesting types of chairs at the Rumbold works recently, ranging from those intended for service in private machines to real luxury equipment for their employers. The "folding bed" type chairs are becoming popular for long-distance flights. K.L.M., which uses this type of chair on the machines operating their Amsterdam-Batavia route, is showing great interest in the Rumbold chairs. Another chair, which will accommodate

of about half that of the ordinary cane chairs! The whole layout, decorating, fireproofing and soundproofing of cabins is carried out by Rumbold. For soundproofing "Seapak" is used. This is an American product and is usually incorporated in the upholstery between a layer of cloth and a layer of leather. The owner of a certain fast cabin machine was unable to hear himself speak, but after his machine had been treated by Rumbold and Co., conversation could be carried out by raising the voice but slightly. Besides the chairs and tables, the Rumbold firm specialise in the manufacture of such items as ash-trays of the "fumeless" variety and cocktail cabinets.

Several types of cabin aircraft may be used for the transport of passengers or freight. The latest Rumbold idea for use in such machines is an "eye" which screws into the socket in the floor normally used by a chair, and which can be used for lashing down the cargo.

Light weight is obtained in Rumbold chairs and tables by the use of Electron tubing, sheeting and bar supplied by James Booth & Co., of Birmingham, and M.G.7. The composition of Electron, which originated in Germany, is 95 per cent. magnesium and 5 per cent. silicon manganese and zinc. At first the company had difficulty in welding the metal, owing to the lack of a suitable flux, but the process now presents no difficulties whatever. Rumbold chairs and tables are chromated and finished off with enamel, and for use in sea-going aircraft an extra bath of chromate is usually given as an anti-corrosion measure. Experimental work is being carried out with new kinds of alloys and something interesting may be expected in the future.

We have just received news that the machines gaining the highest marks for comfort in the Egyptian Aviation Meeting were all upholstered by Rumbolds.



An airscrew acquisition

THE Airscrew Co., Ltd., of Weybridge, has acquired the licence rights to produce a new hood for wooden air-

screws. The hood, which was introduced by the Gustav Schwarz Propellerwerke, of Berlin, is also constructed in Japan by the Kawasaki Company.

THE ROYAL AIR FORCE

London Gazette, January 9, 1934

Group-Capt. R. M. Hill, M.C., A.F.C., is appointed Air Aide-de-Camp to the King (Jan. 1), in the vacancy created by the promotion of Air-Commodore L. A. Pattinson, D.S.O., M.C., D.F.C., to air rank; Group-Capt. T. E. B. Howe, A.F.C., is appointed an additional Air Aide-de-Camp to the King (Jan. 1); The Rev. J. R. Walkey, M.A., Chaplain-in-Chief, Royal Air Force, is appointed an Hon. Chaplain to the King (Jan. 2).

General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—J. B. Altham (March 19, 1933); A. Franklin (Dec. 4, 1933).

Wing-Com. P. C. Sherren, M.C., is placed on half-pay list, scale A (Dec. 21, 1933); Sqdn. Ldr. R. A. George, M.C., is placed on half-pay list, scale A (Jan. 7). The follg. cease to be attached to R.A.F. on return to Naval duty: Lieut. J. E. Fenton, R.N., Flight-Lt., R.A.F. (Dec. 28, 1933); Lieut-Com. G. Willoughby, R.N., Flt.-Lt., R.A.F. (Jan. 2); Lieut-Com. C. L. Keighly-Peach, R.N., F/O., R.A.F. (Jan. 3); Lieut. B. H. M. Kendall, R.N., Flt.-Lt., R.A.F. (Jan. 4).

Lieut. J. H. Charsley, R.N., F/O., R.A.F., relinquishes his temp. commn. on return to Naval duty (Dec. 21, 1933); F/O. R. W. Wallace is transferred to Stores Branch on probation (Jan. 4).

Stores Branch

Flt.-Lt. R. W. Stewart is placed on retired list (Jan. 9).

Dental Branch

F/O. P. J. C. Keane, L.D.S., is promoted to rank of Flt.-Lt. (Jan. 4).

ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flt.-Lt. L. A. W. Deane is transferred from class A to class C (Dec. 9, 1933); Flt.-Lt. C. V. Lock is transferred from class B to class C (Dec. 27, 1933); F/O. A. Prescott is transferred from Class A to class C (Dec. 30, 1933).

SPECIAL RESERVE

General Duties Branch

The follg. Pilot Officers are promoted to rank of Flying Officer:—A. D. Pickup (Nov. 11, 1933); F. Holman (Nov. 20, 1933).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Group Captain D. C. S. Evill, D.S.C., A.F.C., to Air Ministry, Dept. of the Chief of the Air Staff 1.1.34, for duty as Deputy Director of Staff duties, vice G/Capt. T. L. Leigh-Mallory, D.S.O.

Wing Commander R. H. M. S. Saundby, M.C., D.F.C., A.F.C., to R.A.F. Staff College, Andover, 1.1.34. For duty as Instructor, vice W/Cdr. C. E. H. Medhurst, O.B.E., M.C.

Squadron Leader G. D. Daly, D.F.C., to No. 54 (F) Sqdn., Hornchurch, 4.1.34, to Command, vice S/Ldr. I. M. Rodney.

Flight Lieutenants: I. A. Bertram, to No. 17 (F) Sqdn., Upavon, 22.12.33. H. H. Brookes to H.Q., Coastal Area, Lee-on-the-Solent, 22.12.33. J. A. Elliott to No. 4 (A.C.) Sqdn., S. Farnborough, 22.12.33. S. McKeever, D.F.C., to H.Q., Inland Area, Stanmore, 22.12.33. A. L. A. Perry-Keene, to No. 58 (B) Sqdn., Worthy Down, 22.12.33. B. H. C. Russell, to H.Q., Central Area, Abingdon, 22.12.33. H. J. Saker, to No. 12 (B) Sqdn., Andover, 22.12.33. G. S. Shaw, to H.Q., Coastal Area, Lee-on-the-Solent, 22.12.33. C. H.

Appleton, to Armoured Car Section, Aden, 29.12.33. D. M. Fleming, to No. 45 (B) Sqdn., Helwan, Egypt, 29.12.33.

Flying Officers: R. J. Parkhouse, to R.A.F. Base, Gosport, 1.1.34. A. W. Vincent, to No. 26 (A.C.) Sqdn., Catterick, 1.1.34.

Stores Branch

Flight Lieutenant W. T. Lewis, to R.A.F. Depot, Middle East, Aboukir, 12.12.33.

Accountant Branch

Squadron Leader P. J. Farmer, to H.Q., Central Area, Abingdon, 3.1.34, for Accountant duties.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

Lieut.-Cdr. (Flight Lt., R.A.F.)—I. R. Grant, to Suffolk.

Lieuts. (Flying Officers, R.A.F.)—J. M. Wintour, to Victory for School of Naval Co-operation, Lee-on-Solent (Jan. 4) and to Achilles. J. H. T. Boteler, to Cumberland; and J. C. Cockburn, to Kent.

Specialisation of Short-Service Officers

THE undermentioned officers reached the qualifying standard in the Specialisation Examination for short-service officers. Specialisation vacancies will be allotted to the first twelve. Subject to physical fitness, arrangements will be made for those marked "E" to join the Home Aircraft Depot, Henlow, for the course commencing on August 9, 1934, those marked "S" to join the Electrical and Wireless School, Cranwell, for the course commencing on April 23, 1934, and those marked "A" to join the Air Armament School for the course commencing February 27, 1934. The service on the active list of those who are due for transfer to the reserve before their specialist courses terminate, will be extended pending their consideration for permanent commissions on the results of their training.

Flying Officers.—(1) Murphy, J. J., "E"; (2) Crosbie, L. J., "S"; (3) Tester, J. A., "S"; (4) Casey, B. A., "E"; (5) Husbands, W. H., "E"; (6) Skinner, C. G., "E"; (7) Smith, C. H., "E"; (8) Harrison, R. B., "E"; (9) Macdonald, D. M. T., "A"; (10) Warton, K. R., "E"; (11) Richmond, R. C., "S"; (12) Baker-Carr, J. D., "A"; (13) Arnold, R. G. C.; (14) Bowman, A. McD.; (15) Pilling, H.; (16) Haynes, P.; (17) MacDermot, T. J.; (18) Forbes, J. A. C.; (19) Polglase, P. J.; (20) Foster, G. A. C.; (21) Nixon, G. E. B.; (22) Wemyss, J. R.; (23) Morris, D. G.; (24) Anderson, L. H.; (25) Smith, F. G. L.; (26) Marlow, H. W.; (27) Seavill, F. C.; (28) Farley, W. R.; (29) McAuley, J. N.; (30) Brice, G. R.; (31) Rae, R. A. R.; (32) Garland, A. H.; (33) Lees, R. B.; (34) Blair, H. G.

The undermentioned officers have been selected for Non-Specialist Permanent Commissions:—Flying Officers.—Adams, A. A.; Begg, J. A. B.; Brice, G. R.; Foster, G. A. C.; Marlow, H. W.; Morris, D. G.; Polglase, P. J.; Wemyss, J. R.

And the following for Medium Service Commissions:—Flight Lieutenants.—Barrow, H. A. J. de S.; Jaques, J. N. Flying Officers.—Anderson, L. H.;

Arnold, R. G. C.; Bennett, R. J.; Berry, E. R.; Birks, C. F.; Brew, J. K.; Collins, A. R.; Farley, W. R.; Garland, A. H.; Harman, R. G.; Hendrikz, N. C.; Hue-Williams, I. V.; Kippenberger, R. L.; MacDermot, T. J.; McKenna, A. F.; Nixon, G. E. B.; O'Hagan, J. G. B.; Pilling, H.

Aerodrome Obstructions

THE Air Ministry announces that Aerodrome obstructions are frequently being reported as being marked by red flags instead of by the standard markings. Red flags should not be used for this purpose as it has been proved by experience that red flags are not readily visible from the air and are not therefore adequate as warning signals, particularly to visiting pilots. In future, temporary aerodrome obstructions which can be marked effectively by standard markings are not to be reported, but the operation of tractors, carts, mowers, etc., over a part of the aerodrome which cannot be indicated by the use of standard markings, are still to be notified by signal.

Nomenclature of Aero-Engine—Mercury VI S.2

THE Air Ministry announces:—A new engine of the air-cooled radial 9-cylinder type is being introduced into the service. It is manufactured by the Bristol Aeroplane Co., and follows the general lines of the design of existing service engines of the Pegasus series, but is fully supercharged, runs at higher speed, has higher compression ratio and shorter stroke. It is intended for use with the new fuel of 87 octane value (Specification D.T.D.230). The official name is Mercury VI S.2, and this name is to be used in all correspondence and reports relating to this type of engine.

The rating and other particulars are as follows:—B.H.P. 575/605 at 2,400 normal r.p.m. at 12,500 feet altitude. Compression ratio 6 to 1. Stroke 6½ in.

Formation of Central Area, Royal Air Force

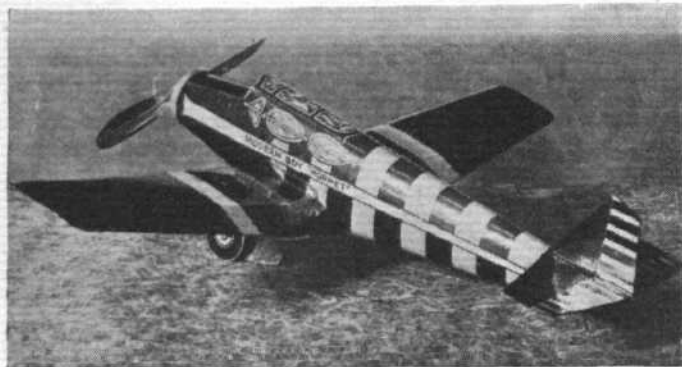
CADRE squadrons will be transferred from No. 1 Air Defence Group to the Western and Central Areas with effect from January 23, 1934.

Royal Air Force Squadrons (see page 53)

OTHER descriptive articles concerning the work of various R.A.F. Squadrons, etc., have been published in FLIGHT as follow:—

H.M. Aircraft Carrier *Glorious*. May 16, 1930.
No. 4 (Army Co-operation) Sq., (South Farnborough); No. 17 (Fighter), Sq. (Upavon); and No. 33 (Bomber), Eastchurch. June 27, 1930.
No. 601 (County of London) (B.) Sq., A.A.F. (at Lympne). August 15, 1930.
No. 43 (Fighter) Sq. (Tangmere). September 19, 1930.
No. 2 (Army Co-operation) Sq. (Manston). December 19, 1930.
No. 101 (Bomber) Sq. (Andover). April 24, 1931.
Nos. 240 and 209 (Flying-Boat) Sq. (Mount Batten). June 12, 1931.
"1890-1912-1931." (An outline of the Growth of the R.A.F.) June 26, 1931.
Cambridge University Air Sq. (at Old Sarum). July 10, 1931.
Central Flying School (Wittering). July 17, 1931.
Submarine Aircraft Carrier "M.2." July 31, 1931.
Oxford University Air Sq. (at Eastchurch). August 7, 1931.
No. 600 (City of London) (Bomber) Sq., A.A.F. (at Tangmere). August 21, 1931.
No. 605 (County of Warwick) (Bomber) Sq. (Cas. Bromwich). April 1, 1932.
No. 40 (Bomber) Sq. (Upper Heyford). May 13, 1932.
Nos. 7 and 58 (Bomber) Sq. (Worthy Down). June 10, 1932.

A visit to H.M.S. *Exeter* of 2nd Cruiser Squadron, Home Fleet. June 17, 1932.
Oxford University Air Sq. (Eastchurch). July 22, 1932.
Cambridge University Air Sq. (Netheravon). August 5, 1932.
No. 1 Air Defence Group (A.A.F. and Cadre Sq.). August 12, 1932.
No. 100 (Bomber) Sq. (Donibristle). August 19, 1932.
Scotland's Auxiliaries; No. 602 (City of Glasgow) (Bomber) Sq. and No. 603 (City of Edinburgh) (Bomber) Sq. September 16, 1932.
London Auxiliaries; Nos. 600, 601 and 604 B. Sq. October 20, 1932.
No. 25 (Fighter) Sq. (Hawkinge). December 8, 1932.
No. 19 (Fighter) Sq. (Duxford). January 5, 1933.
Aircraft Carrier H.M.S. *Courageous*. January 12, 1933.
Lee-on-Solent. February 9, 1933.
No. 23 (Fighter) Sq. March 2, 1933.
Gosport. The Fleet Air Arm Base. March 30, 1933.
Larkhill. R.A.F. Balloon Centre. June 8, 1933.
The R.A.F. Staff College, Andover. July 20, 1933.
No. 99 (Bomber) Sq. (Upper Heyford). August 3, 1933.
No. 26 (Army Co-operation) Sq. (Catterick). August 10, 1933.
No. 3 Flying Training School, Grantham. August 17, 1933.
No. 1 (Fighter) Sq. September 7, 1933.
No. 207 (Bomber) Sq. October 12, 1933.
No. 502 (Ulster) (Bomber) Sq. November 23, 1933.
North Coates Fitties No. 2 Armament Camp. December 21, 1933.



PAPER AERONAUTICS: We have previously referred to the excellent flying paper models produced by Mr. W. Rigby, and we now illustrate his latest effort. This is the "Hornet," the parts for which (to be cut out from stiff paper, folded and glued) are to be given away with every issue of the *Modern Boy* for January 27. The "Hornet" has a span of 12 in. and a length of 9½ in. It has flown a steady course of about 75 yards in two wide circles.

A new Skefko service depot

In order to improve existing arrangements in the North for dealing with the increasing demand for S.K.F. Bearings and power transmission accessories, the Skefko Ball Bearing Co., Ltd., of Luton, have opened a new Stocks and Service Depot at 31, Mosley Street, Newcastle-on-Tyne, 1. Telephone: Newcastle-on-Tyne 23736. Telegrams: Skefko, Newcastle.

Luxor goggle insurance

FOR the third consecutive year Lloyds have given E. B. Meyrowitz, Ltd., an insurance policy in connection with their well-known Luxor goggles, whereby the wearer can claim damages from £1,000 to £5,000 for injury to or loss of an eye while wearing Luxor goggles in flying. In granting this policy, Lloyds are pleased to state that up to this time no claims have been made in connection with this insurance, thereby constituting a wonderful record for Luxor goggles, considering the many thousands in use, especially by officers in the Royal Air Force.

British dope for Turkey

THE Turkish Government have given an order to Cellon for 42 tons of dope, which is all being shipped out next month.

On sick list

MAJ. T. P. SEARIGHT, Joint Managing Director of H. M. Hobson, Ltd., 47/55, The Vale, Acton, who recently underwent an operation for appendicitis, is making satisfactory progress.

The De Havilland aeronautical technical school

THE Annual Ball of the de Havilland Technical School will take place on Friday, February 16, at the Portman Rooms. Mrs. G. de Havilland has kindly consented to give away the prizes. Tickets, 5s. single and 9s. 6d. double, can be obtained from the Dance Secretary, Stag Lane.

Pitcairn "Autogiros"

THE Pitcairn Autogiro Company of America is temporarily suspending the manufacture of "Autogiros." Servicing facilities for "Autogiros" already in use will still be provided. The company is at present entering upon an intensive development programme.

ARMSTRONG-SIDDELEY DEVELOPMENT CO.

ARMSTRONG-SIDDELEY DEVELOPMENT CO., which holds a controlling interest in Armstrong-Siddeley Motors, Sir W. G. Armstrong-Whitworth Aircraft, A. V. Roe & Co., and Air Service Training, announce that:—

The company maintained fully its earnings in the year to September 30, 1933, and showed a net profit of £149,291, as compared with £149,159 for the year 1931-1932. There is to be added to this £33,787 brought forward, which makes a total of £183,078 available, from which £55,571 is absorbed by preference dividends. On the ordinary shares an interim dividend has been paid of 6½ per cent., as compared with the previous 10 per cent. No final dividend is proposed on those shares, an increased sum of £108,568 being carried forward. Shares in subsidiaries are increased from £1,687,918 to £1,719,167, loans to subsidiaries at call from £80,000 to £112,500, and cash at the bank from £66,168 to £92,741. The special reserve remains unchanged at £250,000. Contingent liability on partly paid shares in a subsidiary is reduced from £19,998 to £8,749.

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.

For 1912 and 1913, see FLIGHT for January 17, 1914.

For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1932 being given in FLIGHT, January 19, 1933.

	Imports		Exports		Re-exports	
	1932.	1933.	1932.	1933.	1932.	1933.
Jan. . .	2,456	2,073	122,942	82,963	863	827
Feb. . .	2,503	9,866	181,482	79,357	90	3,050
Mar. . .	1,946	3,760	167,195	126,008	200	821
April. .	622	2,236	142,145	121,030	1,128	94
May . .	1,747	232	138,356	149,214	5	—
June . .	398	1,021	126,330	137,186	125	2,037
July . .	1,070	4,806	142,702	75,634	120	2,520
Aug. . .	511	284	111,073	96,368	3	2,000
Sept. . .	2,161	2,091	115,464	140,323	—	710
Oct. . .	1,511	1,126	192,361	239,814	147	1,513
Nov. . .	182	26,032	113,181	151,485	14	70
Dec. . .	977	3,564	188,591	72,893	1	81
	19,124	57,207	1,741,875	1,465,762	2,696	13,723

PUBLICATIONS RECEIVED

Poems—Group One. By G. W. M. Dunn. London: Jonathan Cape, Ltd. Price 3s. 6d. net.

Clubs (1934): A List of English Clubs in All Parts of the World. Edited by E. C. Austen-Leigh. London: Spottiswoode, Ballantyne and Co., Ltd. Price 7s. 6d. net.

British Industries Fair, 1934: Advance Catalogue. Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Price 1s.

Aluminium Sheet Metal Work. The British Aluminium Co., Ltd., Adelaide House, King William Street, London, E.C.4.

Telcon Metals: Induction Melted Electrical Resistance Alloys in Rod, Wire and Tapes, manufactured by The Telegraph Construction and Maintenance Co., Ltd. Wild-Barfield Electric Furnaces, Ltd., North Road, Holloway, London, N.7.

NEW COMPANIES REGISTERED

ABERDEEN AERODROME FUEL SUPPLIES, LTD.—Registered in Edinburgh. Capital £1,000 in £1 shares. Dealers and suppliers of petrol, benzol, oils, greases and lubricants for aircraft, seacraft and motor vehicles, etc. Directors: Eric L. Gandar Dower, Royal Aero Club, 119, Piccadilly, W., property owner; Jennie L. Hopkins, 50, Colebrooke Row, Islington, N.1; and Caroline Brunning, The Grange, Wilbury Road, Hove, Sussex.

ABERDEEN AIRWAYS, LTD.—Registered in Edinburgh. Capital £8,000 in £1 shares. Objects to develop civil and commercial aviation in the North-East of Scotland and elsewhere, etc. (Directors and other particulars similar to Aberdeen Aerodrome Fuel Supplies, Ltd.).

ABERDEEN FLYING SCHOOL, LTD.—Registered in Edinburgh. Capital £3,500 in £1 shares. Objects to construct, equip and conduct an aerodrome and flying school at Dyce, Aberdeenshire. (Directors and other particulars similar to Aberdeen Aerodrome Fuel Supplies, Ltd.).

ABERDEEN FLYING CLUB, LTD.—Registered in Edinburgh. Capital £3,000 in £1 shares. Objects to provide facilities for social and intellectual intercourse amongst all persons interested in aircraft and aviation; to acquire on lease at Dyce, Aberdeenshire, or elsewhere any site suitable for the erection of pavilions or club houses, etc. (Directors and other particulars similar to Aberdeen Aerodrome Fuel Supplies, Ltd.).

NATIONAL AVIATION DISPLAYS, LTD.—Capital £5,000 in 2,000 management and 3,000 ordinary shares of £1 each. The objects are to promote and encourage aerial navigation, to organise and hold or assist in organising and holding aviation displays, aeroplane and other aircraft shows and exhibitions; advertising agents, publicity agents, etc. Directors: Sir Alan J. Cobham, K.B.E., A.F.C. (chairman), Lady Gladys M. Cobham and Edward J. Rossiter, Sidney T. Morris, The Larches, Harley Street, Leigh-on-Sea. Solicitors: Kenneth Brown, Baker, Baker, Essex House, Essex Street, W.C.2.

MALLING AVIATION, LTD., Malling Aerodrome, West Malling, Kent.—Capital £6,000, in £1 shares. Instructors in aviation, aerial navigation, aerial and ground signalling, dealers in and importers and exporters of aircraft and aircraft engines, etc. Directors: Walter G. Laidlaw, 4, Roland Gardens, Kensington, S.W.7; Mary G. Laidlaw, 4, Roland Gardens, Kensington, S.W.7; Capt. Chas. E. Ward, 22, Queen Anne's Gate, Westminster, S.W.1.

OLLEY AIR SERVICE, LTD., 10, Smith Square, Westminster, S.W.1.—Capital £6,015, in 6,000 6 per cent. cumulative preference shares of £1 and 300 ordinary shares of 1s. each. Objects: to establish, operate and maintain air services; to enter into contracts for individual flights and generally to arrange for transportation of passengers and goods or merchandise by air; and to carry on the business of manufacturers of and dealers in balloons, aeroplanes, hydroplanes and aircraft of all kinds, etc. First directors are not named. Solicitors: A. M. Rickards, Westminster House, 7, Millbank, S.W.1.

PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published January 18, 1934

16,161. H. GATTY. Ground speed and drift indicators for aircraft. (403,370.)
17,077. A. H. R. FEDDEN and BRISTOL AEROPLANE CO., LTD. Means for controlling the fuel and air for supercharged i.c. engines. (403,380.)